VisualAge Pacbase 2.5

PACBENCH QUALITY CONTROL REFERENCE MANUAL

DDPQC000251A

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1. INTRODUCTION

INTRODUCTION

The PacBench Quality Control function evaluates the quality of applications developed with VisualAge Pacbase.

Quality when applied to application writing may be expressed in terms of:

. Homogeneity, cohesion:

The diversity of developers should not be reflected by the same diversity in program writing.

As a result, one's creativity can focus on matters where it is needed, i.e. the functional problems at-hand.

. Reliability:

Indicators measure the most significant criteria influencing system reliability which is a key factor of an information system's quality. These criteria include the application's level of complexity, the extent of component reusability.

. Flexibility:

Multiple hardware platforms, operating systems and DBMS often coexist at many development sites. Measurements of system flexibility include degree of modularity and portability.

. Maintainability:

Because the analysis, correction and enhancement of existing applications account for a large percentage of DP resources, maintainability is becoming of increasing importance.

THE NEED FOR APPLICATION QUALITY CONTROL

A rising number of Development Teams have felt the need for addressing the issue of application quality.

The PacBench Quality Control function responds to this specific need. It includes a set of quality rules found in the Specifications Dictionary and formulated via occurrences of a special User Entity dedicated to Quality Control.

Also, PacBench Quality Control operates in two modes:

1. A standard mode where quality rules are norms supplied at the installation.

2. A personalized mode where quality rules are defined and described via occurrences of the above-mentioned User Entity.

NOTE: Each mode corresponds to a specific purchase option of the PacBench Quality Control function.

STATISTICAL PRINCIPLE AND QUALITY CONTROL SCOPE

The main purpose of the Quality Control function is not to detect every single error in every Program, Screen, or Report, but to evaluate whether the application as a whole is correctly written.

This is why exceptions to the rules are acceptable to the extent that there are only few of them and possibly justified.

However, the two scopes of quality control may apply:

1. The Application scope for which checks are performed on the majority of Programs used by the Application; so as to make sure that they include a minimum of errors, that they comply with the main quality criteria.

2. The Program scope for which rapid checks are performed on the main criteria, and if necessary further validations on the other criteria.

WHEN AND BY WHOM SHOULD QUALITY CONTROL BE CARRIED OUT ?

Quality Control should be a continuous process throughout the Application Development Phase. Therefore, it can be carried out by all persons involved, i.e. developers and project managers.

ORIGINS OF QUALITY FLAWS

The nature of an error is often linked to causes originating in specific phases of the development process. Therefore, dedicated quality indicators are to be used as they relate to one (or several) of these development phases.

1. THE DESIGN PHASE:

   Quantitative indicators such as Size, Number of Segments or Data Structures in Input/Ouput, are used to evidence complexity of programs and compliance with development standards which are set during the Design phase.

2. THE TECHNICAL PHASE:

   Indicators dedicated to Parameterized Macro-Structures show their relevancy; P.M.S.s being decided upon during the project technical study.

3. THE PROGRAMMING PHASE:

   Qualitative indicators are used to analyze the "style" of writing, the structuration of processing, the proper use of all VisualAge Pacbase capabilities.

GOALS OF QUALITY CONTROL

The goals of the PacBench Quality Control function are three-fold:

1. Supply a rating on the quality of one or several elements of an Application written with VisualAge Pacbase.

2. Establish the probable causes of quality flaws: insufficient analysis before design, poor project technical study, confused programming.

3. Allow Quality Control to be personalized according to site's and applications' goals and requirements.

See Chapter "CREATION OF PERSONALIZED RULES & IMPLEMENTATION".

The main criteria used in quality analysis are the following:

. Conformity with quality standards, those supplied at the installation or user-defined standards,

. Complexity,

. Documentation,

. Intrinsic quality of programming.

ENTITIES

Three entity types are subject to Quality Control: Program (including Parameterized Macro-Structures), Screen, and Report.

2. ANALYSIS - RATING - RESULTS

2.1. PRINCIPLE OF ANALYSIS & TECHNICAL IMPLEMENTATION

PRINCIPLE OF QUALITY ANALYSIS

Analysis performed by the PacBench Quality Control function is based on rules described through a 3-level structure:

A Program, Screen, or Report has a quality FACTOR (1) when the CRITERIA (2) which characterize that Factor are met. Analysis regarding each one of these criteria is performed by measuring the corresponding set of INDICATORS (3) which constitute the true metrics of Quality Control.

EXAMPLE: The presence of Functional Documentation is one of the indicators related to the criterion of Readability. In turn, readability characterizes two quality Factors, Maintainability and Flexibility.

This example refers to one of the standard rules of Quality Control supplied at the installation, i.e. the Functional Documentation Indicator, coded I00058, defined and described in Chapter "STANDARD RULES & IMPLEMENTATION", Subchapter "INDICATORS".

TECHNICAL IMPLEMENTATION

Each Factor, Criterion, and Indicator is supported by an occurrence of the User Entity dedicated to Quality Control.
This User Entity, coded ".QPAQC" and whose TYPE code is "5Q", is supplied in standard and cannot be modified.

The reader will find in the next pages the Definition and the two Description screens of occurrences of this User Entity, as well as documentation on their fields (these fields become input fields when using the Personalized option of the PacBench Quality Control function, see Chapter "CREATION OF PERSONALIZED RULES & IMPLEMENTATION").

NOTE: Complete information regarding User Entities and User Entity Occurrences is provided in the DICTIONARY EXTENSIBILITY Reference Manual.

ANALYSIS - RATING - RESULTS 2
PRINCIPLE OF ANALYSIS & TECHNICAL IMPLEMENTATION 1

DEFINITION

TYPE.....: 5Q USER ENTITY.....: .QPAQC

QUALITY RULE _____

U.E. ITEM NAME.....: _____

TYPE OF RULE : 1__
FACTORS/CRITERIA : 2_____
LEVEL OF ANALYSIS : 3
ENTITY TYPE(S) : 4_____
ANALYSIS MODE : 5___
ORIGINATING PHASE : 6_____
IDENTIFIERS REPORT : 7

N	L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
			TYPE OF RULE REQUIRED This occurrence of the .QPAQC User entity supports a:
		FAC CRI MET	Factor Criterion Indicator (or Metrical Unit).
2			FACTORS OR CRITERIA If the occurrence is an Indicator, enter in this fiel at least one Criterion code. If the occurrence is a Criterion, enter in this field at least one Factor code. NOTE: Up to three Factors or Criteria may be entered in this field, they must be separated by a blank character.
			LEVEL OF ANALYSIS This field must be entered if the occurrence is an In dicator (it is irrelevant with Criteria and Factors).
		A B C	Overview Detailed In-depth
1			QUALITY-CONTROLLED ENTITY TYPES This field must be entered if the occurrence is an In dicator (it is irrelevant with Criteria and Factors). If several entity types are the target of this Indica tor, they must be separated by a space or by a coma.
		PGM RPT SCR	Program Report Screen
			ANALYSIS MODE This field must be entered if the occurrence is an In dicator (it is irrelevant with Criteria and Factors).
		AUTO MANU	Automatic processing Manual processing Only Indicators assigned an Automatic Analysis Mode may be selected as input to a Quality Control request However, you may assign a Manual Analysis Mode to an Indicator which cannot be automated. As a result, thi "manual" rule is memorized in the VisualAge Pacbase Database.

N L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
		ORIGINATING PHASE This field must be entered if the occurrence is an In dicator (it is irrelevant with Criteria and Factors). An error is often linked to causes originating in specific phases of the development process. Therefore a quality Indicator must be dedicated to one or two of the three development phases which have been ident fied as relevant.
	DESI PROG TECH	Design phase Programming phase Technical study phase NOTE: If the Indicator is assigned two originating phases, separate them by a blank character.
		IDENTIFIERS REPORT
	Y or Blan N	The identifiers are printed. The identifiers are not printed.

ANALYSIS - RATING - RESULTS 2
PRINCIPLE OF ANALYSIS & TECHNICAL IMPLEMENTATION 1

DESCRIPTION 1

ANALYSIS 5Q _____ 1 .....

A	LIN	OP	INSTRUCTION	N	PARAMETERS	ANA	D
	1	2		3	4	5	6

N L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
		OPERATOR FOR CHARACTER STRING SEARC This field is used when more than one character strin is to be checked by the Indicator. and or NOTE: If the instruction includes both AN and OR oper ators, they will not be processed sequentially; AN is prioritized. Example: WITH COLUMN COLUM1 EQUAL TO 'nnn' OR WITH COLUMN COLUM2 EQUAL TO 'mmm' AN WITH COLUMN COLUM3 EQUAL TO 'ppp' The Indicator will be verified if COLUM2 and COLUM3 have the mmm and ppp values, respectivel OR if COLUM1 has the nnn value.
	AN OR	
2		INSTRUCTION REQUIRED SUM UP: Add lines of the type specified in PARAMETERS field. CHECK PRES: Checks the presence of the line type specified in the PARAMETERS field. IF EXIST: Checks the presence of the line type specified in the PARAMETERS field and conditions another action (SUM U and CHECK PRES). WITH COLUMN: Checks the contents of the field/column specified in the PARAMETERS field (used with EQUAL TO, LESS, HIGHE et CONTAINING). EQUAL TO: Checks that the character string entered in the PARAMETERS field is the character string found in the field/column previously specified. LESS: Checks that the character string entered in the PARAMETERS field is less than the character string found in the field/column previously specified.

N	L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
			HIGHER: Checks that the character string entered in the PARAMETERS field is greater than the character string found in the field/column previously specified. CONTAINING: Checks that the character string entered in the PARAMETERS field is included in the field/column previously specified. FOR EACH: Specifies the identifier level on which is performed the Indicator analysis. NOTE: The instruction cannot be written on more than 99 lines. The total number of instruction lines cannot exceed 9,000.
		N	NEGATION This value allows to exclude the value entered in the next field. EXAMPLE: SUM UP WSS WITH COLUMN COLUM1 CONTAINING N '$' This instruction is translated as follows: "Add all those WSS-type lines which do not have a dollar sign in the COLUM1 field". Used with the LESS and HIGHER instructions, a negatio means: 'less than or equal to' and 'greater than or equal to'. NOTE: FOR EACH and WITH COLUMN cannot be followed by a negation.
2			PARAMETERS REQUIRED This field's contents depends on the syntactic unit entered in the INSTRUCTION field. 1. SUM UP, CHECK PRES, IF EXISTS: Specifies the type of line:
		DOC	General Documentation
		TXT	Assigned Text
		LBL	Report Layouts
		STR	Report Structures
		CAT	Report Categories
		DST	Call of Data Structures

N	L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
		PMS	Call of Parameterized Macro-Structures
		BEG	Beginning Insertions
		WSS	Work Areas
		PRC	Procedural Code
		DEL	Call of Data Elements
		SEG	Call of Segments
		DEF	Definition
		COB	Pure COBOL Source Code
		SRC	Source Code (Reverse Engineering output)
		CMP	Dialogue Complement
			NOTE: If several line types are the target of the Indicator, they must be separated by a coma.
			2. EQUAL TO, LESSS, HIGHER, CONTAINING:
			The field contains a character string which must b delimited by a simple quote ('), unless you have specified another delimiter value in the CHARACTER STRING DELIMITER field.
			3. WITH COLUMN:
			This field's value identifies the field to be processed. Fields used by the Program, Screen, and Report entity types are identified by their PAF SQL codes. This is why they are called COLUMNS. See the "PACBENCH QUALITY CONTROL - P.A.F. TABLES FOR P.Q.C." manual supplied as a complement to the pre sent manual for the complete list of PAF SQL codes
			"IPMSOV": Special column used with the following line types only: BEG, WSS and SPE for the Screen and Program entities, and COB and SRC for the Program entity. It is used to find out macro-structure lines overridden by lines of their calling occurrence.
		BLANK	Parameterized Macro-Structure line,
		*	Line overridden by the calling occurrence.
			"IPMSCA": Column called in the PGMPMS and SCRPMS tables. It is used to indicate which lines call Macro-Structures (see the I00005 indicator).
		P	Call of Macro-structures,
		BLANK	Comments.
			4. FOR EACH:

N L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
		The value entered after a FOR EACH syntactic unit specifies the Identifier level upon which the Indicator will perform its analysis:
	1	- All occurrence-related lines,
	2	- Depending on the type of line processed: . WSS: Paragraph level, . PRC: Function level.
	3	- If processed type of line is PRC, analysis is performed at the Sub-Function level.
		NOTE: For Indicators processing Report occurrences the Identifier Level must be set to "1".
		ANALYSIS OF CALLED LINES
	YES	Lines from called Parameterized Macro-Structures or called Screens will be analyzed by the Indicator.
	NO	Default value: Lines from called Parameterized Macro-Structures or called Screens will NOT be analyzed by the Indicator.
		CHARACTER STRING DELIMITER
		This field is used to set another value for the Character String Delimiter. By default, the system recognizes the simple quote (' value.

ANALYSIS - RATING - RESULTS **2**
PRINCIPLE OF ANALYSIS & TECHNICAL IMPLEMENTATION **1**

DESCRIPTION 2

RATING 5Q _____ 2 .....

A LIN	THRES.	DIAGNOSIS	GRA	TY
	_____	_____	___	__
	1_____	2_____	3__	4_
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__
	_____	_____	___	__

N L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
		THRESHOLD (NUMERIC) REQUIRED Up to four rating thresholds can be defined, each threshold must be associated with a Rating TYPE. This field is entered with a 6-digit value which operates differently whether a LImit Rating Type is specified or not. NOTE: All threshold values are inclusive. They must b entered in ascending order. 1. NO Limit is specified: The value entered specifies the upper limit until which the corresponding rating type (and associate grade and diagnosis) is assigned. EXAMPLE: 000180 ST : Up to 180 lines ... --> Standard 000500 BS : Up to 500 lines ... --> Below Standard 999999 NS : More than 500 ... --> Non Standard 2. A Limit is specified: - ST, BS, NS lines: The value entered specifies the maximum number o Identifier levels (>"1") - where the error (def- ined by the LImit threshold) is found - for whic the corresponding rating type (and associated grade and diagnosis) is assigned. - LI line: The value entered specifies the acceptable numbe of times the Indicator can detect the error on the given identifier level. EXAMPLE: See Indicator supplied in standard, coded I00037 (CH: $5QI00037D2). . When using the CHECK PRES syntactic unit, threshold must be set to "0" and "1". . When using the SUM UP syntactic unit, the "999999" maximum threshold value is required.
4		DIAGNOSIS You may enter here a short comment which will be printed in the Quality Control output report.
		GRADE (NUMERIC)

N L	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
		REQUIRED The grade may range from 000 to 100.
		TYPE OF RATING REQUIRED ST Standard BS Below Standard NS Non Standard LI Required if the Indicator is assigned an Identifier level greater than "1".

2.2. OPERATING MODE & RATING PRINCIPLE

OPERATING MODE

Whether implementing standard or user-defined rules, a Quality Control request may be qualified at four different levels, all four of them being specified in the request's User Input.
For complete details on User Input, see "USER INPUT" Subchapters, in Chapters "STANDARD RULES & IMPLEMENTATTION" and "CREATION OF PERSONALIZED RULES & IMPLEMENTATION".

1. Selection of rules relevant to the request.
2. Use of the ANALYSIS LEVEL parameter which modify the request's scope.
3. Modification of Indicator thresholds.
4. Selection of a type of output report (documented in next subchapter).

1. SELECTION OF RULES:

REMINDER: Each Indicator is linked to at least one Criterion, each Criterion is related to at least one Factor.

As a result, rule selections may be made in three different ways:

. Selection of Factors:

All Criteria related to the selected Factors are selected. Implicitly, all Indicators linked to these Criteria are used by the Quality Control request.

. Selection of Criteria:

All Indicators linked to the selected Criteria are used by the Quality Control request.

. Direct selection of Indicators.

NOTE: No more than 1000 Indicators can be processed, whether they are selected explicitly or implicitly.

Rules supplied in standard involve 65 Indicators.

In other words, all rules -- either standard-supplied or user-defined -- are not necessarily used by a Quality Control request. It is up to the user to determine which rules are to be taken into account.

NOTE: When using standard-supplied rules, all Indicators apply if no rule is selected.

2. LEVEL OF ANALYSIS:

Each Indicator (standard or user-defined) is assigned a Level of Analysis:

"A" = OVERVIEW
"B" = DETAILED
"C" = IN-DEPTH

EXAMPLE: The standard Indicator of Functional Documentation is assigned the "A" Level of Analysis, meaning that it is used by Overview-type analyses.

In addition to the selections described in Paragraph No.1, this parameter restricts or enlarges the scope of the request:

. If the "A" Level of Analysis is chosen, Indicators assigned the "A" value only will be processed.

. If the "B" Level of Analysis is chosen, Indicators assigned the "A" and "B" values will be processed.

. If the "C" Level of Analysis is chosen, all Indicators will be processed.

NOTE: The "C" Level of Analysis is the default option.

3. MODIFICATION OF INDICATOR THRESHOLDS:

Values of thresholds may be modified for a given execution of a Quality Control request.

RATING PRINCIPLE

1. Each Indicator produces a diagnosis and a grade. A synthesis is subsequently made on the following levels (average of grades produced by selected Indicators):

. Criteria linked to the selected Indicators,
. Factors related to the selected Criteria,
. Overall synthesis.

2. Each Indicator is assigned one or several origins of quality flaw (See "INTRODUCTION" Chapter).

EXAMPLE: Indicator of Functional Documentation

Causes of a lacking or insufficient Functional Documentation originate in the Design phase since it is during this Development phase that such Documentation should be written.

A grade is therefore computed for each one of the three originating phases (Design, Technical, Programming phases) by averaging grades given by their associated Indicators. Each one of these three grades is an overall rating since the Indicator/Criterion/Factor levels are irrelevant here.

3. WEIGHTING PARAMETER:

A weighting parameter, assigned to each Level of Analysis, is used in the calculation of grade averages. By default, they are all set to "1". They can be modified in the User Input.

EXAMPLE: If the OVERVIEW Level of Analysis is considered as more important than the DETAILED or IN-DEPTH levels, its associated weighting parameter should be greater.

SUMMARY OF ELEMENTS NECESSARY TO THE CALCULATION

Level of indicator	A	B	C
Weighing parameter (default=1)	Pa	Pb	Pc
Number of standard indicators	na1	nb1	nc1
Number of below standard indicators	na2	nb2	nc2
Number of non-standard indicators	na3	nb3	nc3
Number of indicators per level ni=ni1+ni2+ni3	na	nb	nc
Average grade for standard indicators (mi1)	ma1	mb1	mc1
Average grade for below standard indic. (mi2)	ma2	mb2	mc2
Average grade for non-standard indicat. (mi3)	ma3	mb3	mc3
Grade for each Ni level	Na	Nb	Nc

$$Ni = \frac{mi1*ni1 + mi2*ni2 + mi3*ni3}{ni}$$

Comprehensive grade

$$N = \frac{Na*Pa + Nb*Pb + Nc*Pc}{Pa + Pb + Pc}$$

Note: In cases where the number of indicators for one level is null, the weighing parameter is null for this level in the calculations.

2.3. QUALITY CONTROL RESULTS: OUTPUT REPORTS

QUALITY CONTROL RESULTS: OUTPUT REPORTS

The results of a Quality Control request may be formatted in two ways:

1. A global report including:

- for the set of analyzed occurrences as a whole:

. Overall grade,
. Grades for each one of the three originating phases.

- for each analyzed occurrence:

. Overall grade.

This type of report allows to zero in on flawed occurrences.

2. A detailed report including:

. Grade produced by each Indicator,
. Grade for each Criterion,
. Grade for each Factor,
. Overall grade,
. Grades for each one of the three originating phases.

These results are given for each entity type, and then for each occurrence.

QUALITY CONTROL RESULTS: PACQMJ FILE

Results by entity type.

```
SEGMENT DEFINITION          C700

NAME.....................: SHARED PART RESULTS PER TYPE

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: RECTYP
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER...........: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	1		ENTITY TYPE
2	3		LIBRARY CODE This code identifies a library. The library code is assigned at the time a library is created and cannot be modified. Special characters are not allowed in a library code but any alphanumeric character can be used. INTER-LIBRARY MODE ---------- *** Reserved for selection of all the libraries (referred to as 'Inter-library' mode). This is commonly used when viewing the Database. AUTHORIZATION TO MANAGE THE PEI FUNCTION ---------- $E A specific library code has been reserved for the management of the Production Environment Interface function. This library does not have to be defined in the Database and cannot be accessed when you log on normally to the Database. ACCESS TO THE USER PARAMETERS ---------- $P This library cannot be accessed when you log on to the Database normally.
3	5		SESSION This field is made up of the session number and the version of a session.
4	1		QUALITY CONTROL LEVEL
5	30		LABEL OF ENTITY TYPE
6	3	NUMER.	NUMBER OF ENTITIES CHECKED
7	2		TYPE OF RECORD

```
SEGMENT DEFINITION          C703

NAME.....................: RESULTS PER QUALITY INDICATOR

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '03'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER...........: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	6		CODE OF THE RULE
2	36		NAME OF THE RULE
3	1		QUALITY CONTROL LEVEL
4	3	NUMER.	NUMBER OF STANDARD ENTITIES
5	3	NUMER.	NUMBER OF BELOW STANDARD ENTITIES
6	3	NUMER.	NUMBER OF NON-STANDARD ENTITIES
7	5	NUMER.	RATE OF NON-STANDARD ENTITIES
8	3	NUMER.	GRADE FOR AN INDICATOR

```
SEGMENT DEFINITION          C706

NAME.....................: RESULTS PER QUALITY CRITERION

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '06'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER...........: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	6		CODE OF THE CRITERION
2	36		NAME OF THE RULE
3	3	NUMER.	GRADE FOR EACH CRITERION

```
SEGMENT DEFINITION          C708

NAME.....................: RESULTS BY QUALITY FACTOR

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '08'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER...........: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	6		FACTOR CODE
2	36		NAME OF THE RULE
3	3	NUMER.	GRADE FOR EACH FACTOR

```
SEGMENT DEFINITION          C709

NAME.....................: GENERAL DIAGNOSIS

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '09'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER............: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	3	NUMER.	GRADE FOR EACH QUALITY CONTROL
2	3	NUMER.	GRADE FOR EACH REALIZATION
3	3	NUMER.	GRADE FOR EACH TECHNICAL REPORT
4	3	NUMER.	GENERAL GRADE

```
SEGMENT DEFINITION          C710

NAME.....................: TECHNICAL RECORD

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '10'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER...........: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	1		LANGUAGE INDICATOR
		F	French.
		E	English.
2	1		GENERAL STATUS ASKED
3	1		SYSTEM DATE FORMAT INDICATOR For IBM hardware: This option is used to indicate the position of the day and month in the system date. It is used for date operations in the Structured Code function.
		N	Machine date obtained in the format 'day-month-year'.
		I	Machine date obtained in the format 'month-day-year'. (Default option when a Library is defined.)
			For other hardware: This option cannot be used. Date operations will be executed in a unique way. NOTE: This field cannot be used to indicate the position of day and month in the date field used for printed documentation; this is obtained with a parameter in the Database Restoration (REST) procedure.

QUALITY CONTROL RESULTS: PACQMK FILE

Results by entity.

```
SEGMENT DEFINITION          C800

NAME.....................: SHARED PART RESULTS PER ENTITY

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: RECTYP
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER............: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	6		ENTITY CODE This field is displayed with the label "ENTITY" on screen format options "1", "2" and "3" of the GP screen. When required, the user enters the entity code which corresponds to the COMMAND FOR PRINT REQUEST. List of possible values of methods: M for Merise D for YSM Y for Yourdon A for SSADM O for OMT F for IFW On the screen format option "4" of the GP screen, this field is displayed with the label "LINE". The JCL lines will be sorted according to the number entered in this field.
		<600000	JCL lines at the beginning of the job stream.
		>599999	JCL lines at the end of the job stream.
2	2		TYPE OF RECORD
3	3		LIBRARY CODE This code identifies a library. The library code is assigned at the time a library is created and cannot be modified. Special characters are not allowed in a library code but any alphanumeric character can be used. INTER-LIBRARY MODE ----------
		***	Reserved for selection of all the libraries (referred to as 'Inter-library' mode). This is commonly used when viewing the Database.

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
			AUTHORIZATION TO MANAGE THE PEI FUNCTION ----------
		$E	A specific library code has been reserved for the management of the Production Environment Interface function. This library does not have to be defined in the Database and cannot be accessed when you log on normally to the Database.
			ACCESS TO THE USER PARAMETERS ----------
		$P	This library cannot be accessed when you log on to the Database normally.
4	5		SESSION This field is made up of the session number and the version of a session.
5	1		QUALITY CONTROL LEVEL
6	30		LABEL OF ENTITY TYPE
7	36		LABEL OF CHECKED ENTITY

```
SEGMENT DEFINITION          C803

NAME.....................: RESULTS PER QUALITY INDICATOR

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '03'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER............: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	6		CODE OF THE RULE
2	36		NAME OF THE RULE
3	1		QUALITY CONTROL LEVEL
4	6	NUMER.	STANDARD THRESHOLD
5	6	NUMER.	BELOW STANDARD THRESHOLD
6	6	NUMER.	NON-STANDARD THRESHOLD
7	6	NUMER.	COUNTER
8	3	NUMER.	GRADE
9	40		NOTATION DIAGNOSIS The label recorded in the DIAGNOSIS field is the one which will be at the top of the Quality Control report for each Quality Rule processed. This allows for making the diagnosis more precise, depending on the rules taken into account. Examples of diagnosis: ========== Normal size of program Too many lines in the sub-function *** call the sub-programs via MSP *** call the required on-line skeleton

```
SEGMENT DEFINITION          C806

NAME.....................: RESULTS PER QUALITY CRITERION

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '06'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER...........: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	6		CODE OF THE CRITERION
2	36		NAME OF THE RULE
3	3	NUMER.	GRADE FOR EACH CRITERION

```
SEGMENT DEFINITION          C808

NAME.....................: RESULTS PER QUALITY FACTOR

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '08'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER...........: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	6		FACTOR CODE
2	36		NAME OF THE RULE
3	3	NUMER.	GRADE FOR EACH FACTOR

```
SEGMENT DEFINITION          C809

NAME.....................: GENERAL DIAGNOSIS

OCCUR. OF SEGMENT IN TABLE:
EST. NUMBER OF INSTANCES..:

VALUE OF RECORD TYPE ELEM.: '09'
CODE OF ACTION CODE ELEM..:
PRESENCE.................: CR:       MO:       DE:
                           M4:       M5:       M6:

SESSION NUMBER............: 5073
```

NUM	LEN	CLASS VALUE	DESCRIPTION OF FIELDS AND FILLING MODE
1	3	NUMER.	GRADE FOR EACH QUALITY CONTROL
2	3	NUMER.	GRADE FOR EACH REALIZATION
3	3	NUMER.	GRADE FOR EACH TECHNICAL REPORT
4	3	NUMER.	GENERAL GRADE

3. STANDARD RULES & IMPLEMENTATION

3.1. LIST OF STANDARD RULES SUPPLIED AT INSTALLATION

CODE	NAME AND COMMENTS
F00001	MAINTAINABILITY
F00007	FLEXIBILITY
F00008	RELIABILITY
F00012	PORTABILITY

STANDARD RULES & IMPLEMENTATION 3
LIST OF STANDARD RULES SUPPLIED AT INSTALLATION 1

CODE	NAME AND COMMENTS
C00001	SIZE
C00002	COMPLEXITY
C00003	READABILITY
C00004	MODULARITY
C00005	STANDARDIZATION

STANDARD RULES & IMPLEMENTATION 3
LIST OF STANDARD RULES SUPPLIED AT INSTALLATION 1

CODE	NAME AND COMMENTS
I00001	PGM/SCREEN GROSS SIZE - PMS INCLUDED
I00002	PROGRAM/SCREEN NET SIZE-PMS EXCLUDED
I00003	NUMBER OF PHYSICAL ACCESSES
I00004	NUMBER OF VARIABLE FIELDS IN SCREEN
I00005	NUMBER OF CALLED P.M.S.
I00006	NUMBER OF INPUT/OUTPUT FILES
I00007	INPUT FILES (I IN INPUT-OUTPU)
I00008	OUTPUT FILES (O IN INPUT-OUTPUT)
I00009	GROSS AMOUNT OF SPECIFIC CODE
I00010	NET AMOUNT OF SPECIFIC CODE
I00011	GROSS AMOUNT OF WORKING-STORAGE
I00012	NET AMOUNT OF WORKING-STORAGE
I00013	TECHNICAL GROSS AMOUNT OF WORKING
I00014	TECHNICAL NET AMOUNT OF WORKING
I00015	GROSS AMOUNT OF PROCEDURAL CODE
I00016	NET AMOUNT OF PROCEDURAL CODE
I00017	PROCEDURAL CODE TECHN. GROSS AMOUNT
I00018	PROCEDURAL CODE TECHNICAL NET AMOUNT
I00019	NUMBER OF LITERALS IN SCREEN
I00020	PARAGRAPH NET SIZE / WORKING-STORAGE
I00021	NET SIZE OF SUB-FUNCTIONS
I00022	NUMBER OF SUB-FUNCTIONS PER FUNCTION
I00023	NET NUMBER OF CONDITIONS
I00024	NET NUMBER OF CONDITIONS / FUNCTION
I00025	NET NUMBER OF CONDITIONS PER SUB-FCT
I00026	NET NUMBER OF 'Gxx' OPERATORS
I00027	SEGMENT ACCESS OPERATORS NET NUMBER
I00028	NET NUMBER OF EXPLICIT PERFORMs
I00029	NET NUMBER OF EXPLICIT PERFORMs/FCT
I00030	NET NBR OF EXPLICIT PERFORMs/SUB-FCT
I00031	NET NUMBER OF IMPLICIT PERFORMS
I00032	NET NUMBER OF CALLs
I00033	NET NUMBER OF CALLs PER FUNCTION
I00034	NET NUMBER OF CALLs PER SUB-FUNCTION
I00035	NET NUMBER / MANUAL SCREEN TRANSFERS
I00036	NET NUMBER OF FILES IN WORKING
I00037	NET NUMBER OF PARAGRAPHS IN WORKING
I00038	NET NUMBER OF PURE COBOL OPERATORS
I00039	PURE COBOL OPERATORS / SUB-FUNCTION
I00040	NET NUMBER OF PIC CLAUSES IN WORKING
I00041	NET NUMBER OF 'GDI' OPERATORS
I00042	SCREEN/PROGRAM BEGINNING INSERTIONS
I00043	P.M.S. LINES OVERRIDDEN IN WORKING
I00044	P.M.S. OVERRIDDEN IN PROCEDURAL CODE
I00045	P.M.S. OVERRIDDEN/BEGINNING INSERT.
I00046	EXISTENCE OF SUB-FUNCTION TITLES
I00047	CONDITIONS IN REPORT
I00049	PRESENCE OF 'SUP' OPERATOR(S)
I00050	USE OF THE "GO TO" COBOL INSTRUCTION
I00051	USE OF THE "ALTER" COBOL INSTRUCTION
I00052	USE OF "VARYING" COBOL INSTRUCTION
I00053	USE OF "DEPENDING" COBOL INSTRUCTION
I00054	USE OF "CORRESPONDING" COBOL INSTRU.
I00055	USE OF THE "UNTIL" COBOL INSTRUCTION
I00056	USE OF "CONSOLE" COBOL INSTRUCTION

I00057	USE OF "DISPLAY" COBOL INSTRUCTION
I00058	FUNCTIONAL DOCUMENTATION
I00059	TECHNICAL DOCUMENTATION
I00060	SEGMENT SELECTION 00 RENAME IN -CD
I00062	PHYSICAL ACCESSES WITHOUT P.M.S.s
I00063	NET NUMBER OF LINKS
I00064	NET NUMBER OF LINKS PER FUNCTION
I00065	NET NUMBER OF LINKS PER SUB-FUNCTION

3.2. FACTORS

```
QUALITY RULE         F00001

U.E. ITEM NAME.....: MAINTAINABILITY

TYPE OF RULE       : FAC
FACTORS/CRITERIA   : F00001
LEVEL OF ANALYSIS  :
ENTITY TYPE(S)     :
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307


OP INSTRUCTION              N PARAMETERS               ANA D


THRES. DIAGNOSIS                            GRA TY
```

STANDARD RULES & IMPLEMENTATION 3
FACTORS 2

QUALITY RULE F00007

U.E. ITEM NAME.....: FLEXIBILITY

TYPE OF RULE : FAC
FACTORS/CRITERIA : F00007
LEVEL OF ANALYSIS :
ENTITY TYPE(S) :
ANALYSIS MODE : AUTO
ORIGINATING PHASE :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307

OP INSTRUCTION N PARAMETERS ANA D

THRES. DIAGNOSIS GRA TY

STANDARD RULES & IMPLEMENTATION 3
FACTORS 2

QUALITY RULE F00008

U.E. ITEM NAME.....: RELIABILITY

TYPE OF RULE : FAC
FACTORS/CRITERIA : F00008
LEVEL OF ANALYSIS :
ENTITY TYPE(S) :
ANALYSIS MODE : AUTO
ORIGINATING PHASE :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307

OP INSTRUCTION N PARAMETERS ANA D

THRES. DIAGNOSIS GRA TY

STANDARD RULES & IMPLEMENTATION 3
FACTORS 2

QUALITY RULE F00012

U.E. ITEM NAME.....: PORTABILITY

TYPE OF RULE : FAC
FACTORS/CRITERIA : F00012
LEVEL OF ANALYSIS :
ENTITY TYPE(S) :
ANALYSIS MODE : AUTO
ORIGINATING PHASE :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307

OP INSTRUCTION N PARAMETERS ANA D

THRES. DIAGNOSIS GRA TY

3.3. CRITERIA

```
QUALITY RULE         C00001

U.E. ITEM NAME.....: SIZE

TYPE OF RULE       : CRI
FACTORS/CRITERIA   : F00001 F00008
LEVEL OF ANALYSIS  :
ENTITY TYPE(S)     :
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307


OP INSTRUCTION              N PARAMETERS               ANA D


THRES. DIAGNOSIS                            GRA TY
```

STANDARD RULES & IMPLEMENTATION 3
CRITERIA 3

QUALITY RULE C00002

U.E. ITEM NAME.....: COMPLEXITY

TYPE OF RULE : CRI
FACTORS/CRITERIA : F00001 F00008
LEVEL OF ANALYSIS :
ENTITY TYPE(S) :
ANALYSIS MODE : AUTO
ORIGINATING PHASE :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307

OP INSTRUCTION N PARAMETERS ANA D

THRES. DIAGNOSIS GRA TY

STANDARD RULES & IMPLEMENTATION 3
CRITERIA 3

QUALITY RULE C00003

U.E. ITEM NAME.....: READABILITY

TYPE OF RULE : CRI
FACTORS/CRITERIA : F00001 F00007
LEVEL OF ANALYSIS :
ENTITY TYPE(S) :
ANALYSIS MODE : AUTO
ORIGINATING PHASE :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307

OP INSTRUCTION N PARAMETERS ANA D

THRES. DIAGNOSIS GRA TY

STANDARD RULES & IMPLEMENTATION 3
CRITERIA 3

QUALITY RULE C00004

U.E. ITEM NAME.....: MODULARITY

TYPE OF RULE : CRI
FACTORS/CRITERIA : F00001 F00007
LEVEL OF ANALYSIS :
ENTITY TYPE(S) :
ANALYSIS MODE : AUTO
ORIGINATING PHASE :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307

OP INSTRUCTION N PARAMETERS ANA D

THRES. DIAGNOSIS GRA TY

STANDARD RULES & IMPLEMENTATION 3
CRITERIA 3

QUALITY RULE C00005

U.E. ITEM NAME.....: STANDARDIZATION

TYPE OF RULE : CRI
FACTORS/CRITERIA : F00001 F00012
LEVEL OF ANALYSIS :
ENTITY TYPE(S) :
ANALYSIS MODE : AUTO
ORIGINATING PHASE :
IDENTIFIERS REPORT :

SESSION NUMBER.....: 4307

OP INSTRUCTION N PARAMETERS ANA D

THRES. DIAGNOSIS GRA TY

3.4. INDICATORS

```
QUALITY RULE         I00001

U.E. ITEM NAME.....: PGM/SCREEN GROSS SIZE - PMS INCLUDED

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : DESI TECH
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS               ANA D


   SUM UP                    N DOC,TXT                  YES
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000500                                          100 ST
002000 LARGE GROSS SIZE                         050 BS
999999 ABNORMAL GROSS SIZE                      000 NS

        The gross size of a Program or Screen affects its reliabi-
        lity, and maintainability.
```

QUALITY RULE I00002

U.E. ITEM NAME.....: PROGRAM/SCREEN NET SIZE-PMS EXCLUDED

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI TECH
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP FOR EACH	N DOC,TXT 1	NO

THRES.	DIAGNOSIS	GRA	TY
000300		100	ST
001000	LARGE NET SIZE	050	BS
999999	ABNORMAL NET SIZE	000	NS

The net size of a Program or Screen affects its reliability and maintainability.

QUALITY RULE I00003

U.E. ITEM NAME.....: NUMBER OF PHYSICAL ACCESSES

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001 C00002
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	SEG	
WITH COLUMN	CLIN2	
EQUAL TO	'00'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000010		100	ST
000020	LARGE NUMBER OF PHYSICAL ACCESSES	050	BS
999999	ABNORMAL NUMBER OF PHYSICAL ACCESSES	000	NS

The number of physical accesses reflects a Screen's complexity and may indicate discrepancies between Data Organization and their processing.
It may also hinder the application's performance.

QUALITY RULE I00004

U.E. ITEM NAME.....: NUMBER OF VARIABLE FIELDS IN SCREEN

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001 C00002
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		DEL	YES	
	WITH COLUMN		ODELNA		
	EQUAL TO		'V'		
OR	WITH COLUMN		ODELNA		
	EQUAL TO		'F'		
OR	WITH COLUMN		ODELNA		
	EQUAL TO		'P'		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000015		100	ST
000030	LARGE NUMBER OF VARIABLE FIELDS	050	BS
999999	ABNORMAL NUMBER OF VARIABLE FIELDS	000	NS

The number of variable fields in a Screen indicates the complexity of validations to be performed and the Screen readability to the end-users.

NOTE: The number of variable fields must be relativized since the analyzed Screen may call Screen(s) which include variable fields.

```
QUALITY RULE         I00005

U.E. ITEM NAME.....: NUMBER OF CALLED P.M.S.

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	PMS	
WITH COLUMN	IPMSCA	
EQUAL TO	'P'	
AN WITH COLUMN	OLINC	
EQUAL TO	' '	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000010		100	ST
000020	LARGE NUMBER OF P.M.S CALLED	050	BS
999999	ABNORMAL NUMBER OF P.M.S. CALLED	000	NS

Too many Parameterized Macro-Structure calls may originate
in some programmation difficulties.

```
QUALITY RULE         I00006

U.E. ITEM NAME.....: NUMBER OF INPUT/OUTPUT FILES

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001 C00002
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      DST
   WITH COLUMN                 CLINCS
   EQUAL TO                    '  '
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'W'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'L'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'X'
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000010                                          100 ST
000020 LARGE NUMBER OF INPUT/OUTPUT FILES       050 BS
999999 ABNORMAL NUMBER OF INPUT/OUTPUT FILES    000 NS
```

The number of Input/Ouput files reflects a Program's complexity and may indicate discrepancies between Data Organization and their processing.
It may also hinder the application's performance.

```
QUALITY RULE         I00007

U.E. ITEM NAME.....: INPUT FILES (I IN INPUT-OUTPU)

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001 C00002 C00004
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      DST
   WITH COLUMN                 ODSTFT
   EQUAL TO                    'I'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'W'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'X'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'L'
OR WITH COLUMN                 ODSTFT
   EQUAL TO                    'R'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'W'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'X'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'L'
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000003                                          100 ST
000005 LARGE NUMBER OF INPUT FILES              050 BS
999999 ABNORMAL NUMBER OF INPUT FILES           000 NS
```

A Program's complexity increases very rapidly with the number of Input files. The batch flow should be sub-divided so that a smaller number of Input files be accessed at a time. A large number of Input files may also be an indicator of discrepancies between Data Organization and their processing and might hinder the application's performance.

```
QUALITY RULE         I00008

U.E. ITEM NAME.....: OUTPUT FILES (O IN INPUT-OUTPUT)

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001
LEVEL OF ANALYSIS  : C
ENTITY TYPE(S)     : PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      DST
   WITH COLUMN                 ODSTFT
   EQUAL TO                    'O'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'W'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'X'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'L'
OR WITH COLUMN                 ODSTFT
   EQUAL TO                    'R'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'W'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'X'
AN WITH COLUMN                 ODSTOR
   EQUAL TO                  N 'L'
   FOR EACH                    1


THRES. DIAGNOSIS                               GRA TY


000005                                         100 ST
000010 LARGE NUMBER OF OUTPUT FILES            050 BS
999999 ABNORMAL NUMBER OF OUTPUT FILES         000 NS
```

The number of Output files does not really interfere with a Program's complexity which depends more on the processing which will lead to the writing of these Output files. However, many Ouput files may be an indicator of discrepancies between Data Organization and their processing, and might hinder the application's performance.

QUALITY RULE I00009

U.E. ITEM NAME.....: GROSS AMOUNT OF SPECIFIC CODE

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : B
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI TECH
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	PRC,WSS,BEG	YES
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000450		100	ST
000900	LARGE GROSS AMOUNT OF SPECIFIC CODE	050	BS
999999	ABNORMAL GROSS AMOUNT OF SPECIFIC CODE	000	NS

The number of lines entered in three VA Pac screens; Beginning Insertions, Work Areas, and Procedural Code, is an indication as to what amount of work was dedicated to programming and consequently what workload will be required for maintenance.
These lines are the main subject of Quality Control.

REMINDER: The "gross" qualifier indicates that called Parameterized Macro-Structures are also taken into account.

QUALITY RULE I00010

U.E. ITEM NAME.....: NET AMOUNT OF SPECIFIC CODE

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI TECH
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	PRC,WSS,BEG	NO
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000200		100	ST
000400	LARGE NET AMOUNT OF SPECIFIC CODE	050	BS
999999	ABNORMAL NET AMOUNT OF SPECIFIC CODE	000	NS

The number of lines entered in three VA Pac screens; Beginning Insertions, Work Areas, and Procedural Code, is an indication as to what amount of work was dedicated to programming and consequently what workload will be required for maintenance.
These lines are the main subject of Quality Control.
The net amount of specific code is also an indicator of reliability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00011

U.E. ITEM NAME.....: GROSS AMOUNT OF WORKING-STORAGE

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      WSS,BEG                   YES
   FOR EACH                    1


THRES. DIAGNOSIS                                  GRA TY


000050                                            100 ST
000100 LARGE GROSS AMOUNT OF WORKING-STORAGE      050 BS
999999 ABNORMAL GROSS AMOUNT OF WORKING-STORAGE   000 NS
```

The number of lines entered in two VA Pac screens;
Beginning Insertions and Work Areas, is an indication as to
their correct usage.
It may also allow to detect too much flagging in the Program
or Screen.

REMINDER: The "gross" qualifier indicates that called
Parameterized Macro-Structures are also taken
into account.

QUALITY RULE I00012

U.E. ITEM NAME.....: NET AMOUNT OF WORKING-STORAGE

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	WSS,BEG	NO
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000030		100	ST
000060	LARGE NET AMOUNT OF WORKING-STORAGE	050	BS
999999	ABNORMAL NET AMOUNT OF WORKING-STORAGE	000	NS

The number of lines entered in two VA Pac screens;
Beginning Insertions and Work Areas, is an indication as to
their correct usage.
It may also allow to detect too much flagging in the Program
or Screen.
The net amount of WORKING-STORAGE is also an indicator of
reliability.

REMINDER: The "net" qualifier indicates that called
Parameterized Macro-Structures are not taken
into account.

```
QUALITY RULE         I00013

U.E. ITEM NAME.....: TECHNICAL GROSS AMOUNT OF WORKING

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      WSS                       YES
   WITH COLUMN                 TLIN
   EQUAL TO                 N '*'
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000040                                          100 ST
000080 LARGE TECHNICAL GROSS AMOUNT OF WORKING   050 BS
999999 ABNORMAL TECH.  GROSS AMOUNT OF WORKING   000 NS
```

The "technical" qualifier indicates that comment lines are not taken into account.
The number of lines entered in the Work Areas screen is an indication as to their correct usage and readability.
It may also allow to detect too much flagging in the Program or Screen.

REMINDER: The "gross" qualifier indicates that called Parameterized Macro-Structures are also taken into account.

QUALITY RULE I00014

U.E. ITEM NAME.....: TECHNICAL NET AMOUNT OF WORKING

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N	PARAMETERS	ANA D
SUM UP		WSS	NO
WITH COLUMN		TLIN	
EQUAL TO	N	'*'	
FOR EACH		1	

THRES.	DIAGNOSIS	GRA	TY
000015		100	ST
000030	LARGE TECHNICAL NET AMOUNT OF WORKING	050	BS
999999	ABNORMAL TECHNICAL NET AMOUNT OF WORKING	000	NS

The "technical" qualifier indicates that comment lines are not taken into account.
The number of lines entered in the Work Areas screen is an indication as to their correct usage.
It may also allow to detect too much flagging in the Program or Screen.
The net amount of WORKING-STORAGE is also an indicator of reliability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00015

U.E. ITEM NAME.....: GROSS AMOUNT OF PROCEDURAL CODE

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : B
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI TECH
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP FOR EACH	PRC 1	YES

THRES.	DIAGNOSIS	GRA	TY
000350		100	ST
000700	LARGE GROSS AMOUNT OF PROCEDURAL CODE	050	BS
999999	ABNORMAL GROSS AMOUNT OF PROCEDURAL CODE	000	NS

The number of lines entered in the Procedural Code screen is an indication as to their correct usage.

REMINDER: The "gross" qualifier indicates that called Parameterized Macro-Structures are also taken into account.

QUALITY RULE I00016

U.E. ITEM NAME.....: NET AMOUNT OF PROCEDURAL CODE

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI TECH
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP FOR EACH	PRC 1	NO

THRES.	DIAGNOSIS	GRA	TY
000150		100	ST
000300	LARGE NET AMOUNT OF PROCEDURAL CODE	050	BS
999999	ABNORMAL NET AMOUNT OF PROCEDURAL CODE	000	NS

The number of lines entered in the Procedural Code screen is an indication as to their correct usage.
The net amount of WORKING-STORAGE is also an indicator of reliability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00017

U.E. ITEM NAME.....: PROCEDURAL CODE TECHN. GROSS AMOUNT

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : DESI TECH
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                       YES
   WITH COLUMN                 DLINOP
   EQUAL TO                  N '*  '
AN WITH COLUMN                 DLINOP
   EQUAL TO                  N 'MES'
   FOR EACH                    1


THRES. DIAGNOSIS                                 GRA TY


000300                                           100 ST
000600 LARGE PROCEDURAL CODE TECH. GROSS AMOUNT   050 BS
999999 ABNORMAL   PROC. CODE TECH. GROSS AMOUNT   000 NS
```

The "technical" qualifier indicates that comment lines are not taken into account.
The number of lines entered in the Procedural Code screen is an indication as to their correct usage.

REMINDER: The "gross" qualifier indicates that called Parameterized Macro-Structures are also taken into account.

STANDARD RULES & IMPLEMENTATION 3
INDICATORS 4

QUALITY RULE I00018

U.E. ITEM NAME.....: PROCEDURAL CODE TECHNICAL NET AMOUNT

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI PROG
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO	N	'* '		
AN	WITH COLUMN		DLINOP		
	EQUAL TO	N	'MES'		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000120		100	ST
000240	LARGE PROCEDURAL CODE TECHN. NET AMOUNT	050	BS
999999	ABNORMAL PROCED. CODE TECHN. NET AMOUNT	000	NS

The "technical" qualifier indicates that comment lines are not taken into account.
The number of lines entered in the Procedural Code screen is an indication as to their correct usage.
The net amount of Procedural Code is also an indicator of reliability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00019

U.E. ITEM NAME.....: NUMBER OF LITERALS IN SCREEN

TYPE OF RULE : MET
FACTORS/CRITERIA : C00004
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	DEL	YES
WITH COLUMN	ODELNA	
EQUAL TO	'L'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000010		100	ST
000020	LARGE NUMBER OF LITERALS	050	BS
999999	ABNORMAL NUMBER OF LITERALS	000	NS

Too many literals used in a Screen map may cause maintenance problems as they cannot be found via cross-references.
It may also indicate an insufficient knowledge of the management of Data Elements labels by VisualAge Pacbase.

STANDARD RULES & IMPLEMENTATION 3
INDICATORS 4

QUALITY RULE I00020

U.E. ITEM NAME.....: PARAGRAPH NET SIZE / WORKING-STORAGE

TYPE OF RULE : MET
FACTORS/CRITERIA : C00003
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	WSS	NO
FOR EACH	2	

THRES.	DIAGNOSIS	GRA	TY
000001		100	ST
000005	SOME PARAGRAPHS IN WORKING ARE TOO LONG	050	BS
999999	TOO MANY PARAG. IN WORKING ARE TOO LONG	000	NS
000018	LENGTH OF WORK AREAS SCREEN (CH: -W)	000	LI

Paragraphs written on more than 18 lines cannot be displayed on one screen page. This may hinder readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00021

U.E. ITEM NAME.....: NET SIZE OF SUB-FUNCTIONS

TYPE OF RULE : MET
FACTORS/CRITERIA : C00003
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP FOR EACH	PRC 3	NO

THRES.	DIAGNOSIS	GRA	TY
000001		100	ST
000005	SOME SUB-FUNCTIONS ARE TOO LONG	050	BS
999999	TOO MANY SUB-FUNCTIONS ARE TOO LONG	000	NS
000018	LENGTH OF PROCEDURAL CODE SCREEN (CH:-P)	000	LI

Sub-functions written on more than 18 lines cannot be displayed on one screen page. This may hinder readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00022

U.E. ITEM NAME.....: NUMBER OF SUB-FUNCTIONS PER FUNCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		NSFC		
	EQUAL TO	N	'00'		
AN	WITH COLUMN		NSFC		
	EQUAL TO	N	'99'		
	FOR EACH		2		

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000002	SOME FCT HAVE TOO MANY SUB-FUNCTIONS	050	BS
999999	TOO MANY FCT HAVE TOO MANY SUB-FUNCTIONS	000	NS
000011	THRESHOLD NUMBER OF SUB-FUNCTIONS	000	LI

A large number of Sub-functions in a Function is an indicator as to how complex is the processing.
Too many complex Functions should be avoided.

```
QUALITY RULE         I00023

U.E. ITEM NAME.....: NET NUMBER OF CONDITIONS

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : DESI PROG
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA D
	SUM UP		PRC	NO
	WITH COLUMN		NSFC	
	EQUAL TO	N	'00'	
AN	WITH COLUMN		TSFC	
	EQUAL TO	N	'BL'	
AN	WITH COLUMN		DLINOP	
	EQUAL TO	N	'E '	
	FOR EACH		1	

THRES.	DIAGNOSIS	GRA	TY
000100		100	ST
000200	LARGE NET NUMBER OF CONDITIONS	050	BS
999999	ABNORMAL NET NUMBER OF CONDITIONS	000	NS

The number of conditions is an indicator as to how complex will be the maintenance of the code in which they are used. This complexity is directly related to the degree of complexity emerging from the Application Design phase.
The following Sub-Function structures; If Then (IT), Else (EL), Do (DO), Do While (DW), Case Of (CO), and Do Until (DU), are considered as conditions.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00024

U.E. ITEM NAME.....: NET NUMBER OF CONDITIONS / FUNCTION

TYPE OF RULE : MET
FACTORS/CRITERIA : C00002
LEVEL OF ANALYSIS : B
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : DESI PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		NSFC		
	EQUAL TO	N	'00'		
AN	WITH COLUMN		TSFC		
	EQUAL TO	N	'BL'		
AN	WITH COLUMN		DLINOP		
	EQUAL TO	N	'E '		
	FOR EACH		2		

THRES.	DIAGNOSIS	GRA	TY
000001		100	ST
000005	SOME FUNCTIONS HAVE TOO MANY CONDITIONS	050	BS
999999	TOO MANY FUNCTIONS HAVE TOO MANY CONDIT.	000	NS
000020	ACCEPTABLE NUMBER OF CONDITIONS PER FCT	000	LI

The number of conditions is an indicator as to how complex will be the maintenance of the code in which they are used. This complexity is directly related to the degree of complexity emerging from the Application Design phase. However, a small number of Functions may have complex conditions.
The following Sub-Function structures; If Then (IT), Else (EL), Do (DO), Do While (DW), Case Of (CO), and Do Until (DU), are considered as conditions.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00025

U.E. ITEM NAME.....: NET NUMBER OF CONDITIONS PER SUB-FCT

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		NSFC		
	EQUAL TO	N	'00'		
AN	WITH COLUMN		TSFC		
	EQUAL TO	N	'BL'		
AN	WITH COLUMN		DLINOP		
	EQUAL TO	N	'E '		
	FOR EACH		3		

THRES.	DIAGNOSIS	GRA	TY
000001		100	ST
000005	SOME SUB-FCT HAVE TOO MANY CONDITIONS	050	BS
999999	TOO MANY SUB-F HAVE TOO MANY CONDITIONS	000	NS
000006	ACCEPTABLE NUMBER OF CONDITIONS IN SUB-F	000	LI

The number of conditions is an indicator as to how complex will be the maintenance of the code in which they are used. This complexity is directly related to the degree of complexity emerging from the Application Design phase. However, a small number of Sub-Functions may have complex conditions.
The following Sub-Function structures; If Then (IT), Else (EL), Do (DO), Do While (DW), Case Of (CO), and Do Until (DU), are considered as conditions.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00026

U.E. ITEM NAME.....: NET NUMBER OF 'Gxx' OPERATORS

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003 C00005
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                         NO
   WITH COLUMN                 DLINOP
   CONTAINING                  'G'
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000010                                          100 ST
000020 LARGE NUMBER OF 'G..' OPERATORS          050 BS
999999 ABNORMAL NUMBER OF 'G..' OPERATORS       000 NS


        Ample usage of the following operators; GT, GF, GFT, GFA,
        GFR, GDI, GDB, etc., shows that Structured
        Programming is often ignored. This may hinder readability.

        REMINDER: The "net" qualifier indicates that called
                  Parameterized Macro-Structures are not taken
                  into account.
```

```
QUALITY RULE         I00027

U.E. ITEM NAME.....: SEGMENT ACCESS OPERATORS NET NUMBER

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00005
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : DESI TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                       NO
   WITH COLUMN                 DLINOP
   CONTAINING                  'X'
AN WITH COLUMN                 DLINOP
   CONTAINING                N 'EX'
   FOR EACH                    1


THRES. DIAGNOSIS                                 GRA TY


000005                                           100 ST
000010 LARGE NUMBER OF MANUAL ACCESSES           050 BS
999999 ABNORMAL NUMBER OF MANUAL ACCESSES        000 NS
```

Ample usage of Segment Access operators (used for manual logical accesses), i.e. operators of type 'X..', shows that the Structured Programming is often ignored.
This may hinder readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00028

U.E. ITEM NAME.....: NET NUMBER OF EXPLICIT PERFORMs

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'PERFORM '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'PERFORM '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'P '		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000010		100	ST
000020	LARGE NUMBER OF EXPLICIT 'PERFORM'S	050	BS
999999	ABNORMAL NUMBER OF EXPLICIT 'PERFORM'S	000	NS

Ample usage of explicit PERFORMs may hinder readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00029

U.E. ITEM NAME.....: NET NUMBER OF EXPLICIT PERFORMs/FCT

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'PERFORM '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'PERFORM '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    'P  '
   FOR EACH                    2


THRES. DIAGNOSIS                                GRA TY


000001                                          100 ST
000002 SOME FUNCTIONS W/ TOO MANY EXPLICIT PERF 050 BS
999999 TOO MANY FCT W/ TOO MANY EXPL. PERFORMS  000 NS
000005 ACCEPTABLE NUMBER OF PERFORMS PER FUNCT. 000 LI


        Ample usage of explicit PERFORMs may hinder readability.
        However, any given Function may include a small number of
        explicit PERFORMs.

        REMINDER: The "net" qualifier indicates that called
                  Parameterized Macro-Structures are not taken
                  into account.
```

```
QUALITY RULE         I00030

U.E. ITEM NAME.....: NET NBR OF EXPLICIT PERFORMs/SUB-FCT

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'PERFORM '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'PERFORM '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    'P  '
   FOR EACH                    3


THRES. DIAGNOSIS                                GRA TY


000001                                          100 ST
000005 SOME SUB-FUNCTIONS W/ TOO MANY EX. PERF. 050 BS
999999 TOO MANY SUB-FCTS W/ TOO MANY EXP. PERF. 000 NS
000002 ACCEPTABLE NUMBER OF PERFORMS / SUB-FCT. 000 LI


        Ample usage of explicit PERFORMs may hinder readability.
        However, any given Sub-Function may include a small number
        of explicit PERFORMs.

        REMINDER: The "net" qualifier indicates that called
                  Parameterized Macro-Structures are not taken
                  into account.
```

```
QUALITY RULE         I00031

U.E. ITEM NAME.....: NET NUMBER OF IMPLICIT PERFORMS

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'PERFORM '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'PERFORM '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    'P  '
OR WITH COLUMN                 DLINOP
   CONTAINING                  'X'
AN WITH COLUMN                 DLINOP
   CONTAINING                N 'EX'
   FOR EACH                    1


THRES. DIAGNOSIS                                 GRA TY


000015                                           100 ST
000030 LARGE NUMBER OF IMPLICIT PERFORMS         050 BS
999999 ABNORMAL NUMBER OF IMPLICIT PERFORMS      000 NS
```

Ample usage of implicit PERFORMs may hinder readability.

NOTE : Manual logical accesses ('X..'-type Segment Access operators) are considered as implicit PERFORMs.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00032

U.E. ITEM NAME.....: NET NUMBER OF CALLs

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'CALL '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'CALL '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'CAL'		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000005		100	ST
000010	LARGE NUMBER OF CALLS	050	BS
999999	ABNORMAL NUMBER OF CALLS	000	NS

Ample usage of CALLs may hinder readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00033

U.E. ITEM NAME.....: NET NUMBER OF CALLs PER FUNCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'CALL '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'CALL '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    'CAL'
   FOR EACH                    2


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
000001 ONE FUNCTION INCLUDES TOO MANY CALLS     050 BS
999999 TOO MANY FUNCTIONS HAVE TOO MANY CALLS   000 NS
000005 ACCEPTABLE NUMBER OF CALLS PER FUNCTION  000 LI


        Ample usage of CALLs may hinder readability.
        However, any given Function may include a small number
        of CALLs
        REMINDER: The "net" qualifier indicates that called
                  Parameterized Macro-Structures are not taken
                  into account.
```

STANDARD RULES & IMPLEMENTATION **3**
INDICATORS **4**

QUALITY RULE I00034

U.E. ITEM NAME.....: NET NUMBER OF CALLs PER SUB-FUNCTION

TYPE OF RULE : MET
FACTORS/CRITERIA : C00002 C00003
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'CALL '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'CALL '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'CAL'		
	FOR EACH		3		

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	ONE SUB-FUNCTION INCLUDES TOO MANY CALLS	050	BS
999999	TOO MANY SUB-FUNCTIONS W/ TOO MANY CALLS	000	NS
000002	ACCEPTABLE NUMBER OF CALLS PER SUB-FCT.	000	LI

Ample usage of CALLs may hinder readability.
However, any given Sub-Function may include a small number of CALLs.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00035

U.E. ITEM NAME.....: NET NUMBER / MANUAL SCREEN TRANSFERS

TYPE OF RULE : MET
FACTORS/CRITERIA : C00003 C00004
LEVEL OF ANALYSIS : B
ENTITY TYPE(S) : SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'OSD'		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'OSC'		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'OTP'		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000001		100	ST
000005	SOME MANUAL SCREEN TRANSFERS ARE PRESENT	050	BS
999999	TOO MANY MANUAL SCREEN TRANSFERS	000	NS

A large number of Screen Transfer operators ('OSD', 'OSC', 'OTP') hinders readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00036

U.E. ITEM NAME.....: NET NUMBER OF FILES IN WORKING

TYPE OF RULE : MET
FACTORS/CRITERIA : C00001
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	WSS	NO
WITH COLUMN	TLIN	
EQUAL TO	'F'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000005		100	ST
000010	LARGE NUMBER OF FILES IN WORKING	050	BS
999999	ABNORMAL NUMBER OF FILES IN WORKING	000	NS

A large number of files in the WORKING-STORAGE Section gives an idea of the number of Data Elements and Segments being processed.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00037

U.E. ITEM NAME.....: NET NUMBER OF PARAGRAPHS IN WORKING

TYPE OF RULE : MET
FACTORS/CRITERIA : C00003
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	WSS	NO
FOR EACH	2	

THRES.	DIAGNOSIS	GRA	TY
000002		100	ST
000005	SEVERAL PARAGRAPHS IN WORK AREAS (CH:-W)	050	BS
999999	TOO MANY PARAGRAPHS IN WORK AREAS(CH:-W)	000	NS
000001	PRESENCE OF AT LEAST ONE PARAGRAPH IN -W	000	LI

A large net number of paragraphs entered in the Screen's or Program's Work Areas does not allow for a general overview, it therefore hinders readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00038

U.E. ITEM NAME.....: NET NUMBER OF PURE COBOL OPERATORS

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00003 C00005
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	PRC	NO
WITH COLUMN	DLINOP	
EQUAL TO	'COB'	
OR WITH COLUMN	DLINOP	
EQUAL TO	'COA'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000001		100	ST
000005	LARGE NET NUMBER OF PURE COBOL OPERATORS	050	BS
999999	ABNORMAL NET NUMBER OF PURE COBOL OPER.	000	NS

Pure COBOL operators generate COBOL instructions whose particularity is that they are little portable.

The abundance of such operators may indicate an insufficient knowledge of VisualAge Pacbase operators or show that Structured Programming is somehow voluntarily ignored.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00039

U.E. ITEM NAME.....: PURE COBOL OPERATORS / SUB-FUNCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00003 C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
OR WITH COLUMN                 DLINOP
   EQUAL TO                    'COA'
   FOR EACH                    3


THRES. DIAGNOSIS                                  GRA TY


000000                                            100 ST
999999 SOME SUB-FUNCTIONS W/ SEVERAL COBOL OPER   000 NS
000002 ACCEPTABLE NBR OF COBOL OPERATORS/SUB-FC    000 LI
```

Pure COBOL operators generate COBOL instructions whose particularity is that they are little portable.
The abundance of such operators may indicate an insufficient knowledge of VisualAge Pacbase operators or show that Structured Programming is somehow voluntarily ignored.
However, two pure COBOL operators per sub-function is acceptable.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00040

U.E. ITEM NAME.....: NET NUMBER OF PIC CLAUSES IN WORKING

TYPE OF RULE : MET
FACTORS/CRITERIA : C00004
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		WSS	NO	
	WITH COLUMN		DLINWD		
	CONTAINING		' PIC'		
AN	WITH COLUMN		DLINWD		
	CONTAINING	N	'$'		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000005		100	ST
000010	LARGE NUMBER OF PIC CLAUSES	050	BS
999999	ABNORMAL NUMBER OF PIC CLAUSES	000	NS

PIC or PICTURE clauses invoked in WORKING-STORAGE sections jeopardize maintainability if corresponding Data Elements are subsequently created in the PACBASE/CS Specifications Dictionary.

NOTE: Such clauses are not taken into account by this indicator when they are invoked with an M.S.P. parameter.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

QUALITY RULE I00041

U.E. ITEM NAME.....: NET NUMBER OF 'GDI' OPERATORS

TYPE OF RULE : MET
FACTORS/CRITERIA : C00002 C00003 C00005
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
SUM UP	PRC	NO
WITH COLUMN	DLINOP	
CONTAINING	'GDI'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	LARGE NUMBER OF 'GDI' OPERATOR	050	BS
999999	ABNORMAL NUMBER OF 'GDI' OPERATOR	000	NS

The GDI operator may cause serious initialization problems.

Ample usage of the 'GDI' operator shows that
Structured Programming is often ignored.
This may hinder readability.

REMINDER: The "net" qualifier indicates that called
Parameterized Macro-Structures are not taken
into account.

QUALITY RULE I00042

U.E. ITEM NAME.....: SCREEN/PROGRAM BEGINNING INSERTIONS

TYPE OF RULE : MET
FACTORS/CRITERIA : C00005
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
CHECK PRES	BEG	NO
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	SPECIFIC PGM/SCREEN BEGINNING INSERTIONS	000	NS

Screen or Program Beginning Insertions must be made in Parameterized Macro-Structures.

NOTE: This rule does not apply with a DPS7 IDS2 application.

QUALITY RULE I00043

U.E. ITEM NAME.....: P.M.S. LINES OVERRIDDEN IN WORKING

TYPE OF RULE : MET
FACTORS/CRITERIA : C00004
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
IF EXISTS	WSS	YES
CHECK PRES	WSS	YES
WITH COLUMN	IPMSOV	
EQUAL TO	'*'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	M.S.P. LINES OVERRIDDEN IN WORKING	000	NS

Overriding P.M.S. lines cannot be recommended.
Changes made subsequently in the M.S.P. may have harmful consequences.
In addition, the P.M.S. integrity is lost.

QUALITY RULE I00044

U.E. ITEM NAME.....: P.M.S. OVERRIDDEN IN PROCEDURAL CODE

TYPE OF RULE : MET
FACTORS/CRITERIA : C00004
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
IF EXISTS	PRC	YES
CHECK PRES	PRC	YES
WITH COLUMN	IPMSOV	
EQUAL TO	'*'	
FOR EACH	1	

THRES. DIAGNOSIS	GRA	TY
000000	100	ST
000001 M.S.P. OVERRIDDEN IN PROCEDURAL CODE	000	NS

Overriding P.M.S. lines cannot be recommended.
Changes made subsequently in the M.S.P. may have harmful consequences.
In addition, the P.M.S. integrity is lost.

QUALITY RULE I00045

U.E. ITEM NAME.....: P.M.S. OVERRIDDEN/BEGINNING INSERT.

TYPE OF RULE : MET
FACTORS/CRITERIA : C00004
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
IF EXISTS	BEG	YES
CHECK PRES	BEG	YES
WITH COLUMN	IPMSOV	
EQUAL TO	'*'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	P.M.S. OVERRIDDEN / BEGINNING INSERTIONS	000	NS

Overriding P.M.S. lines cannot be recommended.
Changes made subsequently in the M.S.P. may have harmful consequences.
In addition, the P.M.S. integrity is lost.

```
QUALITY RULE         I00046

U.E. ITEM NAME.....: EXISTENCE OF SUB-FUNCTION TITLES

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   IF EXISTS                   PRC                       NO
   WITH COLUMN                 DLINOP
   EQUAL TO                  N 'SUP'
   CHECK PRES                  PRC                       NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'N  '
AN WITH COLUMN                 DLINOD
   EQUAL TO                  N ' '
   FOR EACH                    3


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
999999 SOME SUB-FUNCTIONS HAVE NO TITLE         000 NS
000000 UNTITLED SUB-FUNCTION                    000 LI


        All Sub-Functions must have a title.

        NOTE: The absence of a Sub-Function title may be due to
              P.M.S. lines completed at the calling Screen or
              Program level.
```

STANDARD RULES & IMPLEMENTATION 3
INDICATORS 4

```
QUALITY RULE         I00047

U.E. ITEM NAME.....: CONDITIONS IN REPORT

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00001
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : RPT
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS               ANA D


   CHECK PRES                  CAT
   WITH COLUMN                 TLIN
   EQUAL TO                    'E  '
AN WITH COLUMN                 DCNDRE
   EQUAL TO                  N ' '
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
000001 CONDITIONS ENTERED IN 'E'-TYPE LINE      000 NS
```

Conditions in Reports may cause totalling problems.

STANDARD RULES & IMPLEMENTATION **3**
INDICATORS **4**

QUALITY RULE I00049

U.E. ITEM NAME.....: PRESENCE OF 'SUP' OPERATOR(S)

TYPE OF RULE : MET
FACTORS/CRITERIA : C00005
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
CHECK PRES	PRC	NO
WITH COLUMN	DLINOP	
EQUAL TO	'SUP'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	ONE 'SUP' OPERATOR IN SPECIFIC LINES	000	NS

'SUP' operators must be used only in Parameterized Macro-Structures. Otherwise, when used in specific lines, they jeopardize the Structured Programming.

```
QUALITY RULE         I00050

U.E. ITEM NAME.....: USE OF THE "GO TO" COBOL INSTRUCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   SUM UP                      PRC                       NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'GO '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'GO '
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000001                                          100 ST
999999 SEVERAL "GO TO" COBOL INSTRUCTIONS FOUND 000 NS

        Usage of the "GO TO" COBOL instruction is not advisable with
        Structured Programming.
```

```
QUALITY RULE         I00051

U.E. ITEM NAME.....: USE OF THE "ALTER" COBOL INSTRUCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   CHECK PRES                  PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'ALTER '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'ALTER '
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
000001 SEVERAL "ALTER" COBOL INSTRUCTIONS FOUND 000 NS

        Usage of the "ALTER" COBOL instruction is not advisable with
        Structured Programming.
```

```
QUALITY RULE         I00052

U.E. ITEM NAME.....: USE OF "VARYING" COBOL INSTRUCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   CHECK PRES                  PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'VARYING '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'VARYING '
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
000001 SEVERAL "VARYING" COBOL INSTRUCTIONS      000 NS


        Usage of the "VARYING" COBOL instruction is not advisable
        with Structured Programming.
```

```
QUALITY RULE         I00053

U.E. ITEM NAME.....: USE OF "DEPENDING" COBOL INSTRUCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	CHECK PRES		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'DEPENDING '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'DEPENDING '		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	SEVERAL "DEPENDING" COBOL INSTRUCTIONS	000	NS

Usage of the "DEPENDING" COBOL instruction is not advisable
with Structured Programming.

```
QUALITY RULE         I00054

U.E. ITEM NAME.....: USE OF "CORRESPONDING" COBOL INSTRU.

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   CHECK PRES                  PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'CORRESPONDING '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'CORRESPONDING '
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
000001 SEVERAL "CORRESPONDING" COBOL INSTRUCT.   000 NS

        Usage of the "CORRESPONDING" COBOL instruction is not
        advisable with Structured Programming.
```

```
QUALITY RULE         I00055

U.E. ITEM NAME.....: USE OF THE "UNTIL" COBOL INSTRUCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   CHECK PRES                  PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'UNTIL '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'UNTIL '
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
000001 SEVERAL "UNTIL" COBOL INSTRUCTIONS FOUND 000 NS

        Usage of the "UNTIL" COBOL instruction is not advisable with
        Structured Programming.
```

STANDARD RULES & IMPLEMENTATION 3
INDICATORS 4

QUALITY RULE I00056

U.E. ITEM NAME.....: USE OF "CONSOLE" COBOL INSTRUCTION

TYPE OF RULE : MET
FACTORS/CRITERIA : C00005
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	CHECK PRES		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'CONSOLE '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'CONSOLE '		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	SEVERAL "CONSOLE" COBOL INSTRUCTIONS	000	NS

Usage of the "CONSOLE" COBOL instruction is not advisable
with Structured Programming.

```
QUALITY RULE         I00057

U.E. ITEM NAME.....: USE OF "DISPLAY" COBOL INSTRUCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00005
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS                ANA D


   CHECK PRES                  PRC                         NO
   WITH COLUMN                 DLINOP
   EQUAL TO                    'COB'
AN WITH COLUMN                 DLINOD
   CONTAINING                  'DISPLAY '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    '   '
AN WITH COLUMN                 DLINOD
   CONTAINING                  'DISPLAY '
OR WITH COLUMN                 DLINOP
   EQUAL TO                    'MES'
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000000                                          100 ST
000001 SEVERAL "DISPLAY" COBOL INSTRUCTIONS      000 NS

        Usage of the "DISPLAY" COBOL instruction is not advisable
        with Structured Programming.
```

```
QUALITY RULE         I00058

U.E. ITEM NAME.....: FUNCTIONAL DOCUMENTATION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00003
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : SCR PGM RPT
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : DESI
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307


OP INSTRUCTION               N PARAMETERS               ANA D


   SUM UP                      TXT
   WITH COLUMN                 DLINTX
   EQUAL TO                  N ' '
   FOR EACH                    1


THRES. DIAGNOSIS                                GRA TY


000050 FUNCTIONAL DOCUMENTATION IS INSUFFICIENT 000 NS
000500 FUNCTIONAL DOCUMENTATION IS FINE         100 ST
999999 FUNCTIONAL DOCUMENTATION IS WORDY        050 BS
```

Functional Documentation must be written so as to constitute the Programming Book.

STANDARD RULES & IMPLEMENTATION **3**
INDICATORS **4**

QUALITY RULE I00059

U.E. ITEM NAME.....: TECHNICAL DOCUMENTATION

TYPE OF RULE : MET
FACTORS/CRITERIA : C00003
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR PGM RPT
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : N

SESSION NUMBER.....: 4307

OP INSTRUCTION	N	PARAMETERS	ANA D
SUM UP		DOC	
WITH COLUMN		DLIN	
EQUAL TO	N	' '	
FOR EACH		1	

THRES.	DIAGNOSIS	GRA	TY
000010	TECHNICAL DOCUMENTATION IS INSUFFICIENT	000	NS
000060	TECHNICAL DOCUMENTATION IS FINE	100	ST
999999	TECHNICAL DOCUMENTATION IS WORDY	050	BS

Technical Documentation must be written in addition to the Functional Documentation in the Programming Book.

STANDARD RULES & IMPLEMENTATION **3**
INDICATORS **4**

QUALITY RULE I00060

U.E. ITEM NAME.....: SEGMENT SELECTION 00 RENAME IN -CD

TYPE OF RULE : MET
FACTORS/CRITERIA : C00004
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : PGM
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
CHECK PRES	DST	
WITH COLUMN	DDSTSK	
CONTAINING	'=00'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	SEGMENT SELECTION 00 RENAMING IN '-CD'	000	NS

It is recommended to define a 00-type special Segment rather than simulate it via a rename on the Program's Call of Data Structures screen (CH: -CD).
Also, this 00-type special Segment will be used when the Data Base is loaded onto sequential file(s).

QUALITY RULE I00062

U.E. ITEM NAME.....: PHYSICAL ACCESSES WITHOUT P.M.S.s

TYPE OF RULE : MET
FACTORS/CRITERIA : C00005
LEVEL OF ANALYSIS : A
ENTITY TYPE(S) : SCR
ANALYSIS MODE : AUTO
ORIGINATING PHASE : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307

OP INSTRUCTION	N PARAMETERS	ANA D
CHECK PRES	PRC	NO
WITH COLUMN	DLINOP	
CONTAINING	'Y'	
FOR EACH	1	

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	PHYSICAL ACCESSES WITHOUT M.S.P.'S	000	NS

All physical accesses must be initialized by a Parameterized Macro-Structure.

```
QUALITY RULE         I00063

U.E. ITEM NAME.....: NET NUMBER OF LINKS

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG TECH
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'EXC'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
	FOR EACH		1		

THRES.	DIAGNOSIS	GRA	TY
000005		100	ST
000010	LARGE NET NUMBER OF LINKS	050	BS
999999	ABNORMAL NET NUMBER OF LINKS	000	NS

A large number of links may hinder readability.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00064

U.E. ITEM NAME.....: NET NUMBER OF LINKS PER FUNCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : B
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'EXC'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
	FOR EACH		2		

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	ONE FUNCTION WITH TOO MANY LINKS	050	BS
999999	TOO MANY FUNCTIONS HAVE TOO MANY LINKS	000	NS
000005	ACCEPTABLE NUMBER OF LINKS PER FUNCTION	000	LI

A large number of links may hinder readability.
However, any given Function may include a small number of LINKs.
REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

```
QUALITY RULE         I00065

U.E. ITEM NAME.....: NET NUMBER OF LINKS PER SUB-FUNCTION

TYPE OF RULE       : MET
FACTORS/CRITERIA   : C00002 C00003
LEVEL OF ANALYSIS  : A
ENTITY TYPE(S)     : PGM SCR
ANALYSIS MODE      : AUTO
ORIGINATING PHASE  : PROG
IDENTIFIERS REPORT : Y

SESSION NUMBER.....: 4307
```

OP	INSTRUCTION	N	PARAMETERS	ANA	D
	SUM UP		PRC	NO	
	WITH COLUMN		DLINOP		
	EQUAL TO		'COB'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		' '		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
OR	WITH COLUMN		DLINOP		
	EQUAL TO		'EXC'		
AN	WITH COLUMN		DLINOD		
	CONTAINING		'LINK '		
	FOR EACH		3		

THRES.	DIAGNOSIS	GRA	TY
000000		100	ST
000001	ONE SUB-FUNCTION WITH TOO MANY LINKS	050	BS
999999	TOO MANY SUB-FCT'S HAVE TOO MANY LINKS	000	NS
000002	ACCEPTABLE NUMBER OF LINKS/SUB-FUNCTION	000	LI

A large number of links may hinder readability. However, any given Sub-Function may include a small number of LINKs.

REMINDER: The "net" qualifier indicates that called Parameterized Macro-Structures are not taken into account.

3.5. USER INPUT

QUALITY CONTROL : PQCA

The PacBench Quality Control function operates in batch mode and involves the PQCA batch procedure which requires two types of user input:

1. Required input:

. One '*' line:

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	1	*	LINE CODE
3	8	uuuuuuuu	USER CODE
11	8	pppppppp	USER PASSWORD
19	3	bbb	LIBRARY CODE
22	4	ssss	SESSION NUMBER
		BLANK/9999	CURRENT SESSION
26	1		VERSION OF FROZEN SESSION:
		' ' or H	INITIAL
		T	TEST

. One 'Z'-line per occurrence to analyze (required):

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	1	Z	LINE CODE
3	2		NOT USED
5	3		COMMAND LINE INCLUDING ENTITY TYPE
		DCO	Dialog/Screen Analysis
		DCP	Batch Program Analysis
		DCR	Report Analysis
		DGC	Client Component Analysis
		DGS	Server Component Analysis
		GCO	Screen analysis + generation
		GCP	Program analysis + generation
		GGC	Client Component analysis + gener.
		GGS	Server Component analysis + gener.
9	6	cccccc	OCCURRENCE CODE
15	2	C1	Analysis without associated texts
		C2	Analysis of Program or Report with associated texts
		C3	Analysis of Dialog with associated texts

The '*' lines are described in the User Manual, in the introduction of the Batch Procedures Chapter.

Z lines: for each entity, see the description of the generation-print commands. The user must carefully choose the option because PQCA analyzes the GPRT print file. If the user chooses the C1 option for the DCP command, the associated texts will not appear and will not therefore be taken into account by PQCA.

2. Optional input
. Lines for Parameterization of Analysis:

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	1		LINE CODE:
		I	Indicator selection
		C	Criteria selection
		F	Factor selection
		Q	Selection of Level of Analysis
		R	Report type selection
		N	Modification: Weighting parameters
		S	Modification: Indicator thresholds
		M	Minimum grade accepted (0 to 100)
		E	Identifiers report
3	6		IF LINE CODE = I, C, or F: (1)
		ccccccc	Code of Indicator, Criterion or Factor
3	1		IF LINE CODE = Q: (2)
		A	Overview analysis
		B	Detailed analysis
		C or ' '	In-depth analysis (default option)
3	1		IF LINE CODE = R:
		1	Global report
		' '	Detailed report (default option)
			IF LINE CODE = N:
3	1	0 to 9	Weighting parameter for Indicators assigned the "A" Level of Analysis
		1	Default value
4	1	0 to 9	Weighting parameter for Indicators assigned the "B" Level of Analysis
		1	Default value
5	1	0 to 9	Weighting parameter for Indicators assigned the "C" Level of Analysis
		1	Default value

(1): 'I'-, 'C'-, and 'F'-type lines are incompatible. However, each type of line can be repeated as many times as necessary.

(2): If there is a 'Q'-type line entered, it must be unique.

. Lines for Parameterization of Analysis (Cont'd):

POS.	LEN.	VALUE	MEANING
3	6		IF LINE CODE = S:
		cccccc	Code of Indicator whose threshold(s) are to be modified
9	2		Type of threshold to modify:
		ST	Standard
		BS	Below standard
		NS	Non-standard
		LI	Limit
11	6		New threshold value
17	2		Type of threshold to modify
19	6		New threshold value
25	2		Type of threshold to modify
27	6		New threshold value
33	2		Type of threshold to modify
35	6		New threshold value
3	3		IF LINE CODE = M:
		nnn	Minimum grade accepted (0 to 100)
3	1		IF LINE CODE = E:
		Y or blank	Identifiers report
		N	No identifiers report

NOTE:

Those two types of input must be described separately. See the JCL and the description of steps in the Operations Manual, Part II 'Batch Procedures'.

4. CREATION OF PERSONALIZED RULES & IMPLEMENTATION

4.1. INTRODUCTION

INTRODUCTION

The Personalized option of the Quality Control function allows for the creation of quality rules which exactly respond to the site's and applications' goals, requirements, and standards.

NOTE: standard rules supplied at the installation are obviously still available with this option. As a matter of fact, they can be used as sample examples.

REMINDER: A rule is composed of a Factor, a Criterion, and an Indicator. Each one of these three components is supported by an occurrence of the User Entity dedicated to Quality Control.

This User Entity, coded ".QPAQC" and whose TYPE code is "5Q", is supplied at the installation and cannot be modified.

HOW TO CREATE PERSONALIZED RULES

1. First, create an occurrence of the .QPAQC User Entity for each Factor.

   Then, create an occurrence of the .QPAQC User Entity for each Criterion.

   Only indicators are relevant to the actual analysis, for which they constitute the true metrics. Therefore, only indicators need to be described.

2. Define an occurrence of the .QPAQC User Entity for each Indicator, enter its associated Analysis in its first Description screen, then enter its Rating in its second Description screen, and, finally, comments in the General Documentation screen (CH: $5Q.....G).

   The syntax used to write the Analysis and Rating elements of an Indicator is explained in the next two subchapters.

See Chapter "ANALYSIS - RATING - RESULTS", Subchapter "PRINCIPLE OF ANALYSIS & TECHNICAL IMPLEMENTATION" for a complete description of input fields used in the Definition and two Description screens of occurrences of the .QPAQC User Entity.

NOTE: Complete information regarding User Entities and User Entity Occurrences is provided in the DICTIONARY EXTENSIBILITY Reference Manual.

4.2. ANALYSIS SYNTAX

ANALYSIS SYNTAX

Analysis performed by an Indicator is entered in the first Description screen of its supporting occurrence.

Enter the following input in the CHOICE field:

CH: $5Q.....D1

SYNTACTIC UNITS:

Syntactic units are available to formulate a Quality Control request, they are to be entered in the INSTRUCTION field of the Indicator's first Description screen.

IF EXISTS : Checks the presence of a type of line specified in the PARAMETERS field, and conditions another action (SUM UP, CHECK PRES).

SUM UP : Adds lines of the type specified in the PARAMETERS field.

CHECK PRES : Checks the presence of a type of line specified in the PARAMETERS field.

WITH COLUMN: Indicates that a validation is to be made for the field specified in the PARAMETERS field.

IMPORTANT NOTE:
Fields used by the Program, Screen and Report entity types are identified by their PAF SQL codes. This is why they are called COLUMNs.

Refer to the "PACBENCH QUALITY CONTROL - P.A.F. TABLES FOR P.Q.C." manual supplied as a complement to the present manual for the complete list of PAF SQL codes.

CONTAINING : Validates the presence (or the absence in case of negation) of a character string specified in the PARAMETERS field.

EQUAL TO : Checks that the character string entered in the PARAMETERS field is (or is not in case of negation) the character string found in the field/column previously specified.

LESS : Checks that the character string entered in the PARAMETERS field is less than (or 'less than or equal to' in case of negation) the character string found in the field/column previously specified.

HIGHER : Checks that the character string entered in the PARAMETERS field is greater than (or 'greater than or equal to' in case of negation) the character string found in the field/column previously specified.

FOR EACH : Specifies the identifier level on the Indicator analysis is performed (1 = entity, 2 = function,

3 = sub-function).

NOTE: If the level is 2 or 3, the LI type must be entered.

SYNTAX RULES:

The first instruction line must mention an IF EXISTS, or a SUM UP, or a CHECK PRES.

Besides, the instruction can include only one of each of these three syntactic units.

Also, the instruction must include one SUM UP or one CHECK PRES (these two syntactic units being incompatible), and one FOR EACH.

IF EXISTS is necessarily followed by a CHECK PRES or a SUM UP.

EQUAL TO, LESS, HIGHER, and CONTAINING must be preceded by a WITH COLUMN.
Several EQUAL TO, LESS, HIGHER, or CONTAINING may be used if an Operator (OR and/or ANd) is entered before each one of these syntactic units starting with the second.
If the instruction includes ANd and OR operators, they will not be processed sequentially; AN is prioritized.

EXAMPLE:

```
   WITH COLUMN    COLUM1
   EQUAL TO       'nnn'
OR WITH COLUMN    COLUM2
   EQUAL TO       'mmm'
AN WITH COLUMN    COLUM3
   EQUAL TO       'ppp'
```

This indicator will be verified if COLUM2 and COLUM3 have the mmm and ppp values, respectively, OR if COLUM1 has the nnn value.

FOR EACH and WITH COLUMN cannot be followed by a negation.

The Character String Delimiter is used only with CONTAINING, EQUAL TO, LESS, and HIGHER. The default delimiter is ' (simple quote).

The last instruction line must mention a FOR EACH; there is no default option.

4.3. RATING SYNTAX

RATING SYNTAX

Rating associated with an Indicator is entered in the second Description screen of its supporting occurrence.

Enter the following input in the CHOICE field:

CH: $5Q.....D2

It is possible to define up to four grading thresholds (6-digit numeral in the THRESHOLD field).
Each threshold is associated with a TYPE of rating and a GRADE.

The DIAGNOSIS field should be entered with an explicit label.

A grade out of 100 is indicated in the GRA field, according to the grading threshold.

NOTES:

The LImit TYPE is required when the Indicator is assigned an Identifier level "2" or "3".

With a CHECK PRES, thresholds must be set to 0 and 1.
With a SUM UP, the 999999 maximum threshold value is required.

4.4. USER INPUT

EXTRACTION OF PERSONALIZED QUALITY RULES : PQCE

Before proceeding to the actual Quality Control (PQCA), user-defined quality rules, i.e. occurrences of the .QPAQC User entity which have been created, must be extracted into a file via the PQCE batch procedure.
This file will be used as input to the PQCA procedure.

PQCE USER INPUT

. One '*'-line (required):

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	1	*	LINE CODE
3	8	uuuuuuuu	USER CODE
11	8	pppppppp	USER PASSWORD
19	3	bbb	LIBRARY CODE
22	4	ssss	SESSION NUMBER
		BLANK/9999	CURRENT SESSION
26	1		VERSION OF FROZEN SESSION:
		' ' or H	INITIAL
		T	TEST

. One Extraction line for all occurrences of the User Entity dedicated to Quality Control (required):

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	4	W1EX	LINE CODE
6	1	$	IDENTIFIER OF U.E.O. EXTRACTIONS
7	1		LIBRARY SELECTION:
		U	Selected Library
		C	Selected Library+Higher-Level Lib.
8	2	5Q	TYPE CODE OF USER ENTITY DEDICATED
			TO QUALITY CONTROL

QUALITY CONTROL : PQCA

The PacBench Quality Control function operates in batch mode and involves the PQCA batch procedure which requires two types of user input:

1. Required input:

. One '*' line:

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	1	*	LINE CODE
3	8	uuuuuuuu	USER CODE
11	8	pppppppp	USER PASSWORD
19	3	bbb	LIBRARY CODE
22	4	ssss	SESSION NUMBER
		BLANK/9999	CURRENT SESSION
26	1		VERSION OF FROZEN SESSION:
		' ' or H	INITIAL
		T	TEST

. One 'Z'-line per occurrence to analyze (required):

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	1	Z	LINE CODE
3	2		NOT USED
5	3		COMMAND LINE INCLUDING ENTITY TYPE
		DCO	Dialog/Screen Analysis
		DCP	Batch Program Analysis
		DCR	Report Analysis
		DGC	Client Component Analysis
		DGS	Server Component Analysis
		GCO	Screen analysis + generation
		GCP	Program analysis + generation
		GGC	Client Component analysis + gener.
		GGS	Server Component analysis + gener.
9	6	cccccc	OCCURRENCE CODE
15	2	C1	Analysis without associated texts
		C2	Analysis of Program or Report with associated texts
		C3	Analysis of Dialog with associated texts

The '*' lines are described in the User Manual, in the introduction of the Batch Procedures Chapter.

Z lines: for each entity, see the description of the generation-print commands. The user must carefully choose the option because PQCA analyzes the GPRT print file. If the user chooses the C1 option for the DCP command, the associated texts will not appear and will not therefore be taken into account by PQCA.

2. Optional input
. Lines for Parameterization of Analysis:

POS.	LEN.	VALUE	MEANING
1	1		NOT USED
2	1		LINE CODE:
		I	Indicator selection
		C	Criteria selection
		F	Factor selection
		Q	Selection of Level of Analysis
		R	Report type selection
		N	Modification: Weighting parameters
		S	Modification: Indicator thresholds
		M	Minimum grade accepted (0 to 100)
		E	Identifiers report
3	6		IF LINE CODE = I, C, or F: (1)
		ccccccc	Code of Indicator, Criterion or Factor
3	1		IF LINE CODE = Q: (2)
		A	Overview analysis
		B	Detailed analysis
		C or ' '	In-depth analysis (default option)
3	1		IF LINE CODE = R:
		1	Global report
		' '	Detailed report (default option)
			IF LINE CODE = N:
3	1	0 to 9	Weighting parameter for Indicators assigned the "A" Level of Analysis
		1	Default value
4	1	0 to 9	Weighting parameter for Indicators assigned the "B" Level of Analysis
		1	Default value
5	1	0 to 9	Weighting parameter for Indicators assigned the "C" Level of Analysis
		1	Default value

(1): 'I'-, 'C'-, and 'F'-type lines are incompatible. However, each type of line can be repeated as many times as necessary.

(2): If there is a 'Q'-type line entered, it must be unique.

. Lines for Parameterization of Analysis (Cont'd):

POS.	LEN.	VALUE	MEANING
3	6		IF LINE CODE = S:
		cccccc	Code of Indicator whose threshold(s) are to be modified
9	2		Type of threshold to modify:
		ST	Standard
		BS	Below standard
		NS	Non-standard
		LI	Limit
11	6		New threshold value
17	2		Type of threshold to modify
19	6		New threshold value
25	2		Type of threshold to modify
27	6		New threshold value
33	2		Type of threshold to modify
35	6		New threshold value
3	3		IF LINE CODE = M:
		nnn	Minimum grade accepted (0 to 100)
3	1		IF LINE CODE = E:
		Y or blank	Identifiers report
		N	No identifiers report

NOTE:

Those two types of input must be described separately. See the JCL and the description of steps in the Operations Manual, Part II 'Batch Procedures'.