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7. Page 1 of 40

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Effective Date

PROCEDURE CHANGE NOTICE (PCN)

MAR 2 1 1994

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2. Procedure Title Sampling Program For Assessing, Estimating, and Reporting Commercial Grade Item Quality

3. Originator Jerry W. Reynolds PAX No. 86658

4. Date Originated March 10, 1994

5. Reason For Change To correct error in Table 2 (Attachment 6) Standard Nondestructive and Standard Destructive Sampling Size

6. Description of Change:

☐ Affected Page PCN ☑ Entire Document PCN

INCORPORATES PCN 1-1

9. PCN Deviation Approval (if required): N/A
Responsible Division Manager/Designee Date

10. A/BR Credit

The entire document was reviewed in conjunction with this PCN and found to be acceptable. This constitutes an annual/biennial review disposition of "Acceptable As Written-Extend") according to S0123-VI-1.0.2.

N/A
Responsible Division Manager/Designee Date

11. Approvals

3/10/94
(JB) Jerry W Reynolds 3-10-94
Procedure Author Date

N/A
Manager, Station Technical/Designee Date

Thomas [signature] 3-10-94
Responsible Division Manager/Designee Date

[signature] for B. KATZ 3/15/94
Manager of Nuclear Oversight Division/Designee Date

SCE 26-271 REV. 1 9/92 [REFERENCE: S0123-VI-40.2]

SAMPLING PROGRAM FOR
ASSESSING, ESTIMATING, AND REPORTING
COMMERCIAL GRADE ITEM QUALITY

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INTRODUCTION

Traditionally, sampling plans in the past have been based upon criteria that permit acceptance of a lot when a predetermined allowable number of nonconformances are encountered during testing/inspection. With improvements in manufacturing technology and methodology, the traditional acceptance sampling plan needs to be replaced with a system focused on product quality. This statistical sampling program shall be employed when procuring items, to provide a 95 percent assurance of zero defects per lot/batch with a consumer risk of 5 percent.

The concept to be used is that of the ratio of nonconforming items to the total samples subjected to inspection/test, converted to Parts Per Million (PPM) by multiplying by 10^6 (or 1,000,000). This approach provides a uniform method for the measurement of vendor ready-to-ship product quality as received by the consumer. It allows a customer to set quality requirements, or Specified Quality Level (SQL), and provides a method for verifying that an individual batch/lot/item meets the SQL. The customer now has a way of communicating to the supplier a realistic conformance level that will be acceptable. A key feature of this PPM specification is that it provides incentives for suppliers to improve their quality. The PPM specification shall be adopted by Procurement Engineering as part of the sampling process which will be addressed by this procedure.

A parallel concept, used by manufacturing, compares process capability to an engineering specification and is referred to as a Process Capability Index (Cp). It is calculated as the ratio, expressed as a decimal, of the Tolerance Band (Engineering Spec) to the Process Capability Spread (known as 6 sigma). When expressed in relation to the specification mean, it is referred to as the (Cpk) index. The requirement for manufacturing to supply their Cpk index for a batch/lot/item shall be a phased-in technical requirement to the individual Procurement Engineering Package (PEP).

The SQL in PPM approach has been endorsed by the Electronics Industries Association (EIA) as referenced in Sections 5.13 - 5.16 of this procedure.

SAMPLING PROGRAM FOR ASSESSING, ESTIMATING, AND REPORTING COMMERCIAL GRADE ITEM QUALITY

1. GENERAL INFORMATION

1.1 PURPOSE

The purpose of this procedure is to establish a uniform sampling program for accepting commercial grade items (CGIs) at San Onofre Nuclear Generating Station (SONGS). As established by SONGS management, this statistical sampling program shall be employed when procuring items, to provide a 95% assurance of zero defects per lot/batch with a consumer risk of 5%. Additionally, this procedure provides a process for evaluating the quality/acceptability of SCE suppliers.

1.2 SCOPE

1.2.1 This procedure provides for the design, implementation, reporting, and monitoring of a sampling program. This sampling program is necessary to maintain supplier performance history.

1.2.2 This sampling program shall be used in the acceptance/dedication and overcheck process to provide assurance that safety related items will perform their intended safety function. **Refer to Attachment 1.**

1.3 PROVISIONS

1.3.1 This procedure may be implemented without employing the Supplier Quality Database (SQD). The SQD does not have an impact on the initiation of the sampling plan until the database is developed. The SQD can be developed and employed at a later date.

1.3.2 Sampling of Procurement Levels II, III, and VI items are subject to the conditions of this procedure per Procurement Engineering direction.

1.3.3 The supplier may be required, per the Purchase Order (PO), to 100% inspection prior to shipment.

1.3.4 The supplier/manufacturer may be required, per the PO, to submit a Capability Index (Cpk) measure of the process that produced the items specified on the PO.

1.3.5 A correlation computation between the manufacturer's Cpk and the Supplier Quality Index (SQI) may be performed to determine the association between the indexes. A coefficient of correlation will give quantitative meaning to a manufacturer's process quality.

1.4 COMPLIANCE STATUS

1.4.1 This procedure complies with the documents identified in Appendix III of the Topical Quality Assurance Manual (TQAM).

1.4.2 Prior to the use of Nuclear Organization Procedures, it is the user's responsibility to verify the revision and any Procedure Change Notices (PCNs) are current by using one of the following methods:

- Access the San Onofre Document Management System (SDMS)
- Contact the NES&L Procedures Group

2. PROCEDURAL ACTIONS

The Procurement Engineer (PE) is responsible for implementing the sampling program as defined herein, unless otherwise indicated.

2.1 SAMPLING PROGRAM APPLICATION

2.1.1 This statistical sampling program shall be employed when procuring items, to provide a 95% assurance of zero defects per lot/batch with a consumer risk of 5%.

2.1.2 This statistical acceptance sampling program shall be used for inspection/test by attributes and variables.

1. If a single failure/nonconformance is found in a sampling population, the acceptance of the entire lot shall be invalidated.
2. If there is a schedule critical need for an item, conduct 100% sort of the lot until an acceptable quantity meeting the need is obtained. Reject the remainder of the lot.

2.1.3 Lot formation shall be based on product free from transport damage (induced failures) before lot quantity and sampling size are determined.

2.1.4 All samples selected for testing/inspection shall be randomly selected (refer to Section 2.3).

2.1.5 In most cases, nondestructive test(s) shall be conducted before destructive tests.

2.1.6 Exceptions to this sampling program requires an engineering basis of justification that is to be documented and approved by the Test Lab Supervisor.

2.2 SAMPLING PROGRAM IMPLEMENTATION

2.2.1 The Procurement Engineering Package (PEP) shall specify the applicable sampling plan requirements, per SO123-XXXII-2.1, Quality Affecting Technical Evaluation/ Procurement Classification and Acceptance Process.

2.2.2 When material is received, warehouse services checks for overage and shortages. At this time it is determined if the overage or damaged items should be returned to the vendor (for minor cost items). Once the warehouse has released the shipment for QC inspection, the entire population of a specific item shall be considered a lot for use of this procedure.

2.3 SELECTING RANDOM SAMPLES

It is important that samples are taken at random. A random sample set ensures a proper representation of the lot/batch. To conduct random sampling, generate a random number set. The random numbers generated shall be used to identify the items of the lot/batch subject to inspection/test.

A random number set shall be established per:

1 - The PE Random Number Generator

or

2 - The Random Number Table

Refer to Attachments 2 and 3.

The PE Random Number Generator shall be approved by the PE Supervisor.

2.4 SAMPLING PLAN ELEMENTS

2.4.1 Supplier Quality Index (SQI) in units of Parts per Million (PPM)

1. A SQI shall be established to evaluate supplier quality and acceptability. The SQI shall be tracked in an electronic database.

2. The following are the parameters for SQI in PPM for the class or classes of characteristics subject to inspection/test:

- Number of randomly selected items form a lot/ batch without replacement (sample size).
- Number of sample items classified by inspection/test as nonconforming.
- Average proportion of nonconforming items.

2.4.2 PPM Assessment

Assessment of PPM is determined by a test of samples drawn at random from an individual lot or series of lots which are selected to compose a given population. This assessment of PPM is based on test data derived from received items.

Refer to Attachment 4 if there is not any previously established past history.

2.5 "STANDARD" NONDESTRUCTIVE/DESTRUCTIVE SAMPLING PLAN

Refer to Attachment 5 (Page 1 of 2), Keypoints A & B (noted by hexagon) of the flowchart.

2.5.1 For "standard" nondestructive and "standard" destructive testing/inspection, sample size shall be established using Table 2, Attachment 6.

2.5.2 When destructive testing is specified by the Procurement Engineering Package (PEP), additional quantities shall be purchased. If only one set of specimens is required for destructive testing Table 3 Attachment 7 shall be used. For PEPs requiring more than one set of test specimens for destructive testing, contact the CGI Lab Supervisor for the correct order quantity.

2.5.3 If destructive testing is called out, an engineering basis may be used to justify using nondestructive testing. **Refer to Attachment 8 for an example of such a justification.**

2.5.4 If destructive sampling is necessary and the "standard" destructive sampling plan cannot be implemented, then an "alternative" sampling plan (Section 2.6) may be implemented provided that an engineering basis is established to justify using the "alternative" plan.

2.5.5 When destructive testing is required, special consideration should be given to the number and types of test samples needed. Based on the number of test samples needed, the order quantity shall be adjusted.

2.6 "ALTERNATIVE" SAMPLING PLAN

Refer to Attachment 5 (page 1 of 2), Keypoint C (notated by hexagon) of the flowchart, and to Attachment 9 for an example.

There are two critical paths one may take in order to implement the "alternative" destructive sampling plan.

Path 1: Traceable Items
Path 2: Non-Traceable Items

2.6.1 Path 1: Traceable Items

1. When production traceability exists, a sample size of one for each critical characteristic or attribute shall be sufficient. **Refer to Table 4, Attachment 10.**

2. Once the critical characteristics to be verified have been identified and the sample size for each critical characteristic has been chosen, there are different approaches for selecting samples to verify the critical characteristics.

   a. Approach A - The same sample is used to verify all the critical characteristics. Approach A shall be the approach of choice if it can be suitably employed.

   b. Approach B - A different sample is randomly selected from the lot to verify each critical characteristic.

2.6.2 Path 2: Non-Traceable Items

1. When non-traceability exists, a sample size shall be established using Table 5, Sample Size for "Alternative" Testing (Non-Traceable Items). **Refer to Attachment 11.**

2. Refer to Step 2.6.1.2.

2.6.3 The following are examples of the factors that shall provide justification for use of the "alternative" sampling plan:

1. The supplier has a history, based on the SQI, of providing a consistently conforming product.

2. The existence of a correlation between a nondestructive test and a destructive test. For example, hardness has a direct correlation with tensile strength for many material types. An increased sample size for the nondestructive hardness test can compensate for the small sample size chosen for the tensile strength test.

2.7 DATA COLLECTION

2.7.1 A copy of page 1 of the Receiving Inspection Data Report (RIDR) will provide the information necessary to calculate the SQI. **Refer to Attachment 12 for the basis for calculating the SQI.**

2.7.2 The period over which the data may be accumulated for assessing PPM can be defined by the manufacturer, but shall not exceed two years (refer to EIA-554). When stating a calculated value of Cpk/PPM, the manufacturer must state over what time period the data was accumulated.

2.7.3 Inclusion of Data

1. An entire sample shall be inspected for the data to be representative of a lot/batch of product.

2. Data from a product item identified as nonconforming under multiple classes of quality criteria shall be used only once in any assessment of a quality value.

2.7.4 Supplier Quality Database (SQD)

1. Quality related information on safety related items delivered to the warehouse area shall be entered into the SQD (via the RIDR) by the responsible Test Engineer.

2. If an item has been dispositioned as an "induced failure" it shall not be evaluated in the SQI analysis.

3. RESPONSIBILITIES

3.1 PROCUREMENT ENGINEERING

3.1.1 Procurement Engineer

Responsible for implementing the appropriate sampling plan. If the "alternate" sampling plan is implemented, an engineering basis of justification must be provided.

3.1.2 Test Engineer

Responsible for:

1. The input of information from the RIDR to the SQD.

2. Calculating the SQI.

3. Maintaining a local history file of the RIDR copies.

3.2 RECEIVING QUALITY CONTROL (RQC)

Responsible for:

3.2.1 Documenting test results on the RIDR.

3.2.2 Forwarding a copy of the RIDR to the Test Engineer responsible for updating the SQD.

3.2.3 Reporting nonconformances identified during the receipt inspection and testing process. These nonconformances shall be documented on a Warehouse Nonconformance Report (WNCR) form, after which the WNCR shall be forwarded to the WNCR Coordinator for processing. Upon satisfactory completion of the disposition and closeout of the WNCR, the responsible Test Engineer shall then update the SQD.

4. DEFINITIONS

4.1 ACCEPTANCE

The employment of methods to produce objective evidence which provides assurance that a CGI is the item specified.

4.2 ACCEPTANCE CRITERIA

The specific pass/fail parameters employed in the test procedure to verify an item's critical characteristics.

4.3 ACCEPTANCE SAMPLING

One or more units of product or a quantity of material, drawn from a specific lot or process for purposes of inspection to provide information that may be used as a basis for making a decision concerning acceptance of that lot or process. (ASQC)

4.4 ATTRIBUTE

A qualitative property that a product either has or does not have. (ASQC)

4.5 BATCH

A definite quantity of some product or material produced under conditions that are considered uniform. (ASQC)

4.6 CAPABILITY INDEX (Cpk)

A measure of the process capability in relation to the specification mean and is the lesser of:

$$\frac{\text{upper specification limit - mean}}{\text{3 sigma}}$$

or

$$\frac{\text{mean - lower specification limit}}{\text{3 sigma}}$$

4.7 COMMERCIAL GRADE ITEM (CGI) [10CFR21]

An item satisfying all three of the following criteria:

4.7.1 Not subject to design or specification requirements that are unique to nuclear facilities; and

4.7.2 Used in applications other than nuclear facilities; and

4.7.3 Is to be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (for example, a catalog).

4.8 COMMERCIAL GRADE ITEM DEDICATION TEST PROCEDURE (CGIDTP)

CGIDTPs are procedures written to provide detailed testing requirements to verify critical characteristics necessary for the item to perform its safety related function. These procedures utilize existing specifications, regulatory guidance, and/or national industry standards.

4.9 CONSUMER'S RISK

The probability that a bad lot will be accepted.

4.10 CRITICAL CHARACTERISTICS

Identifiable and measurable attributes/variables of an item, which once selected to be verified, provide reasonable assurance that the item will perform its safety function.

4.11 DEDICATION

The point in time after which a CGI is accepted for a safety related application and deficiency reporting becomes the responsibility of the party performing the acceptance.

4.12 ENGINEERING SPECIFICATION

A statement of a desired or required goal within upper and/or lower limits. The variation permitted is described as the tolerance band.

4.13 INDUCED FAILURE

Any failure result not related to vendor quality. Induced failures may be caused by:

- Transportation damage
- Handling accidents (e.g. dropping equipment)
- Improper testing (e.g. exceeding current limits through an electrical device)
- Improper setup of testing (e.g. stripping threads on a valve body)
- Invalid test parameters (e.g. test procedure calls the wrong spec.)

4.14 ITEM [ANSI N45.2.10-1973]

Any level of unit assembly, including structures, systems, subsystems, subassembly, component, part, or material.

4.15 LOT

4.15.1 The total number of units received in RQC is the lot size.

4.15.2 When a purchase order is received in RQC in multiple shipments, it can be considered one lot if there is batch traceability.

4.15.3 When a Purchase Order is received in multiple shipments, each shipment received in RQC is a lot.

4.15.4 When a Purchase Order is received in a single shipment, but multiple batches exist within the shipment, use Table 2 for sample size determination.

4.16 NONCONFORMANCE

4.16.1 A departure of quality characteristic from its intended level or state that occurs with a severity sufficient to cause an associated product or service not to meet a specification requirement (ASQC).

4.16.2 A departure from the requirements specified in a contract, specification, drawing, or other approved product description.

4.16.3 A deficiency in characteristic, documentation or procedure, which renders the quality of an item unacceptable or indeterminate.

4.17 PARTS PER MILLION (PPM) QUALITY LEVEL

The manufacturing fraction nonconforming, expressed in parts per million (ppm).

4.18 PROCESS CAPABILITY (Cp)

Proportion of nonconforming or quality variation that may be expected from a production process working at the settings, speeds, material inputs, and other operating arrangements specified.

4.19 PROCESS CAPABILITY RATIO

An indication of the ratio of the Engineering Specification (Tolerance Band) to the Process Capability Spread (6 sigma).

4.20 PROCESS CAPABILITY SPREAD (6 sigma)

A measure of dispersion or scatter of the values of a random variable about the expected average (mean) expressed in standard units. A 6 sigma spread defines a condition that includes approximately 99.73% of all values resulting from a stable (in control) process.

4.21 PROCUREMENT ENGINEERING PACKAGE (PEP)

A document which specifies QA/technical requirements to procure and accept quality-affecting items or services. The PEP may incorporate other separately approved documents such as specifications or Verification Test Procedures (VTPs), CGIDTPs, or other site procedures. A PEP is designated with a 2, 3, 5, or 6 to indicate the procurement level methods utilized (i.e., PEP2, PEP3, PEP5, or PEP6).

4.22 PROCUREMENT LEVEL (P/L)

A selected method for procurement of quality-affecting items or services. The procurement level designates the type of controls applied to the procurement process commensurate with the item's or service's safety significance.

4.23 RANDOM

Without definite aim, direction, rule, or method. Being or relating to a member of a set whose members have an equal probability of occurring.

4.24 RANDOM NUMBER COMPUTER PROGRAM

A set of defined processes (algorithm) expressed in a sequence of instructions (program) capable of causing a computer to perform the processes and output a random number sample set.

4.25 RESOLUTION CODE

A symbolic representation for a statement of a specific disposition action taken against a nonconformance.

4.26 SAFETY RELATED

A plant structure, system, component or part thereof, necessary to assure:

4.26.1 The integrity of the reactor coolant pressure boundary;

4.26.2 The capability to shut down the reactor and maintain it in a safe shutdown condition; or

4.26.3 The capability to prevent or mitigate the consequences of accidents which could result in potential offsite radiation exposures comparable to those referred to in 10CFR100.11.

4.27 SAMPLE

A group of units, portion of material, or observations taken from a larger collection of units, quantity of material, or observations, which serves to provide information that may be used as a basis for making a decision concerning the larger quantity (ASQC).

4.28 SAMPLE SIZE (n)

The number of units in a sample (ASQC).

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4.29 SHIPMENT-READY PRODUCT

Product that has been through the complete manufacturing process of build, inspect, test and final acceptance. It is product that will be shipped to customers without having to meet any further acceptance criteria.

4.30 SPECIFIED QUALITY LEVEL (SQL)

The maximum fraction nonconforming that is acceptable to the receiver of product. This is tested with a given lot and fixed levels of risk.

4.31 SPLIT LOT

Any lot in which some of the items have a preliminary disposition due to induced failures and are removed from the lot before subjected to sampling.

4.32 SUPPLIER

The organization furnishing a commercial grade item (CGI) or basic component. This could include an original equipment manufacturer (OEM), part manufacturer, or distributor.

4.33 SUPPLIER QUALITY INDEX (SQI)

An analysis used to track the product quality of a supplier, in parts per million (PPM), based on the hypergeometric distribution.

4.34 TOLERANCE BAND

See Engineering Specification (refe to definition 4.12).

4.35 TRACEABLE

A verified and documented history of an item from the time of the original manufacture to the present. If applicable, this history shall include, quality classification, handling, maintenance, and storage information.

4.36 VARIABLE

A quantitative property that a product can be evaluated along a scale of measurement.

5. <u>REFERENCES</u>

5.1 10CFR21, Reporting of Defects and Noncompliance

5.2 10CFR100.11, Determination of Exclusion Area, Low Population Zone, and Population Center Distance

5.3 SO123-XXXII-1, Commercial Grade Item Dedication Test Lab Program Implementation

5.4 SO123-XXXII-2.1, Quality Affecting Technical Evaluation/Procurement Classification and Acceptance Process

5.5 SO123-XXXII-3, Warehouse Nonconforming Material, Parts, or Components

5.6 QAP N10.02, Receiving Inspection

5.7 EPRI NP-7218, Project Q101-7 Final Report May 1991, Guideline for the Utilization of Sampling Plans for Commercial Grade Item Acceptance (NCIG-19)

5.8 EPRI NP-6406, Project Q101-8 Final Report December 1991, Guidelines for the Technical Evaluation of Replacement Items in Nuclear Power Plants (NCIG-11)

5.9 EPRI NP-5652, Project Q101-7 Final Report June 1988, Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)

5.10 EPRI NP-6629, Project Q101-18 Final Report May 1990, Guidelines for the Procurement and Receipt of Items for Nuclear Power Plants (NCIG-15)

5.11 EPRI NP-6895, Project Q101-20 Final Report February 1991, Guidelines for the Safety Classification of Systems, Components, and Parts Used in Nuclear Power Plant Applications (NCIG-17)

5.12 EPRI NP-5638, Projects 2859-5, -6, -7 Final Report April 1988, Guidelines for Preparing Specifications for Nuclear Power Plants (NCIG-04)

5.13 EIA Standard - 554, Assessment of Outgoing Nonconforming Levels in Parts Per Million (PPM), Nov. 1988

5.14 EIA Standard - 555, Lot Acceptance Procedure for Verifying Compliance With the Specified Quality Levels (SQL) in PPM, Jan. 1989

5.15 EIA Standard - 585, Zero Acceptance Number Sampling Procedures and Tables for Inspection by Attributes of Isolated Lots, June 1991

5.16 EIA/IS Standard - 32, Assessment of Quality Levels in PPM Using Variables Test Data, Jan. 1989

5.17 MIL STD 105-E, Sampling Procedures and Tables for Inspection by Attributes

5.18 Eighteenth Annual National Energy Division Conference, Commercial Grade Item Dedication Session

5.19 Reliability, Availability, and Maintainability (RAM) Dictionary, edited by T.P. Omdahl. ASQC Quality Press, 1988

5.20 Quality Control Handbook, edited by J.M. Juran, Section 24: Sampling by Attributes, J.M. Wiesen, McGraw-Hill, 3rd Edition

5.21 ANSI N45.2.10-1973, Quality Assurance Terms and Definitions

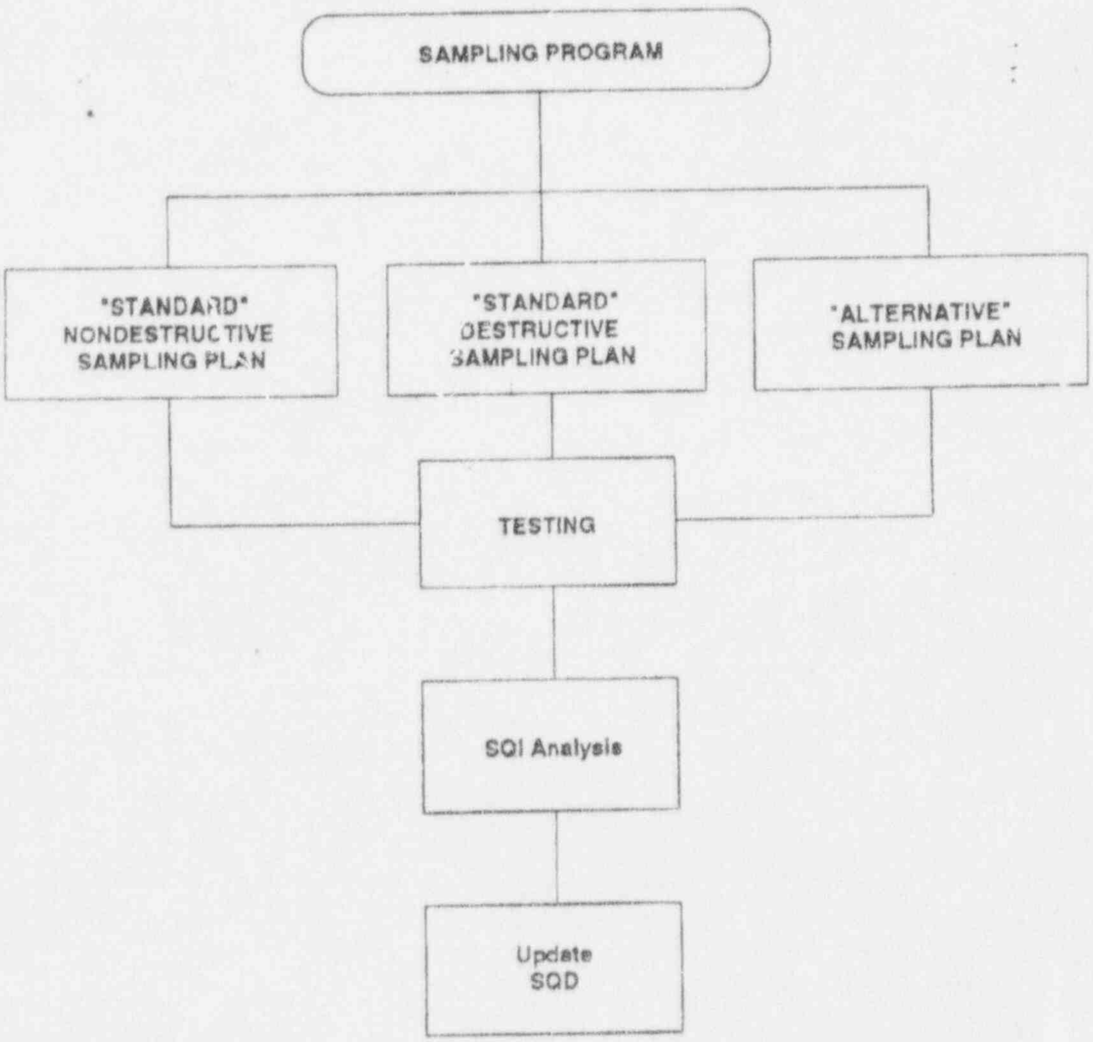
5.22 ANSI/ASME B18.18.1M, Inspection and Quality Assurance for General Purpose Fasteners

5.23 Form 26-535, Supplier Product Quality Transmittal (SPQT)

6. ATTACHMENTS

Attachment 1: Sampling Program Overview
Attachment 2: Table 1 - Random Number Table
Attachment 3: Instructions on How to Use the Random Number Table
Attachment 4: Example of Calculating SQI on Items Without Past History that are "Standard" Nondestruct Tested
Attachment 5: Sampling Program Analysis
Attachment 6: Table 2 - "Standard" Nondestructive & "Standard" Destructive Sampling Size
Attachment 7: Table 3 - Destructive Test Sample Purchasing Guideline
Attachment 8: Example of an Engineering Justification to Substitute a Nondestructive Test for a Destructive Test
Attachment 9: Example of Calculating SQI on Items With Past History that are "Standard" Nondestruct and "Alternate" Tested
Attachment 10: Table 4 - Sample Size for "Alternative" Testing of Critical Characteristics (Traceable Items)
Attachment 11: Table 5 - Sample Size for "Alternative" Testing (Non-Traceable Items)
Attachment 12: Basis for Calculating the SQI
Attachment 13: The Sample Distribution Board
Attachment 14: Supplier Quality Index Analysis in PPM

ATTACHMENT 1
SAMPLING PROGRAM OVERVIEW



ATTACHMENT 2

Table 1 Random Number Table*

1306	1189	5731	3968	5606	5084	8947	3897	1636	7810
0422	2431	0649	8085	5053	4722	6568	5044	9040	5121
6597	2022	6168	5060	8656	6733	6364	7649	1871	4328
7965	6541	5645	6243	7658	6903	9911	5740	7824	8520
7695	6937	0406	8894	0441	8135	9797	7285	5905	9539
5160	7851	8464	6789	3938	4197	6511	0407	9239	2232
2961	0551	0539	8288	7478	7565	5581	5771	5442	8761
1428	4183	4312	5445	4854	9157	9158	5218	1464	3634
3666	5642	4536	1561	7849	7520	2547	0756	1206	2033
6543	6799	7454	9052	6689	1946	2574	9386	0304	7945
9975	6080	7423	3175	9377	6951	6519	8287	8994	5532
4866	0956	7545	7723	8085	4948	2228	9583	4415	7065
8239	7068	6694	5168	3117	1586	0237	6160	9585	1133
8722	9191	3386	3443	0434	4586	4150	1224	6204	0937
1330	9120	8785	8382	2929	7089	3109	6742	2468	7025
2296	2952	4764	9070	6356	9192	4012	0618	2219	1109
3582	7052	3132	4519	9250	2486	0830	8472	2160	7046
5872	9207	7222	6494	8973	3545	6967	8490	5264	9821
1134	6324	6201	3792	5651	0538	4676	2064	0584	7996
1403	4497	7390	8503	8239	4236	8022	2914	4368	4529
3393	7025	3381	3553	2128	1021	8353	6413	5161	8583
1137	7896	3602	0060	7850	7626	0854	6565	4260	6220
7437	5198	8772	6927	8527	6851	2709	5992	7383	1071
8414	8820	3917	7238	9821	6073	6658	1280	9643	7761
8398	5224	2749	7311	5740	9771	7826	9533	3800	4553
0995	8935	2939	3092	2496	0359	0318	4697	7181	4035
6657	0755	9685	4017	6581	7292	5643	5064	1142	1297
8875	8369	7868	0190	9278	1709	4253	9346	4335	3769
8399	6702	0586	6428	7985	2979	4513	1970	1989	3105
6703	1024	2064	0393	6815	8502	1375	4171	6970	1201
4730	1653	9032	9855	0957	7366	0325	5178	7959	5371
8400	6834	3187	8688	1079	1480	6776	9888	7585	9998
3647	8002	6726	0877	4552	3238	7542	7804	3933	9475
6789	5197	8037	2354	9262	5497	0005	3986	1767	7981
2630	2721	2810	2185	6323	6576	4931	8336	6662	3566
1374	8625	1644	3342	1587	0762	6057	8011	2666	3759
1572	7625	9110	4409	0239	7059	3415	5537	2250	7292
9678	2877	7579	4935	0449	8119	6969	5383	1717	6719
0882	6781	3538	4090	3092	2365	6001	3446	9985	6007
0006	4205	2389	4365	1981	8158	7784	6256	3842	5603
4611	9861	7916	9305	2074	9462	0254	4827	9198	3974
1093	3784	4190	6332	1175	8599	9735	8584	6581	7194
3374	3545	6865	8819	3342	1676	2264	6014	5012	2458
3650	9676	1436	4374	4716	5548	8276	6235	6742	2154
7292	5749	7977	7602	9205	3599	3880	9537	4423	2330
2353	8319	2850	4026	3027	1708	3518	7034	7132	6903
1094	2009	8919	5676	7283	4982	9642	7235	8167	3366
0568	4002	0587	7165	1094	2006	7471	0940	4366	9554
5606	4070	5233	4339	6543	6695	5799	5821	3953	9458
8285	7537	1181	2300	5294	6892	1627	3372	1952	3028

*Adapted from "Handbook of Statistical Tables" Addison-Wesley Publishing Company, Inc. Reading, Mass. 1962. Courtesy of U.S. Atomic Energy Commission

ATTACHMENT 3

INSTRUCTIONS ON HOW TO USE THE RANDOM NUMBER TABLE

Once a sample size (n) has been established, it is necessary that samples are selected at random. To conduct random selection requires that a set of random numbers be generated. This procedure uses a Random Number Table of four digit entries. The entries of four digit numbers are considered as four columns of digits and each column may be used singularly or in adjacent combinations to generate numbers 0 through 9, 10 through 99, 100 through 999 and/or 1000 through 9999. This table will be used for received lots of up to 10,000 items. Two adjacent entries will be used when the lot quantity under consideration exceeds 10,000 items.

1 - To use the random number table, a point of entry into the table is determined by noting, with pad and pencil/pen, the direction in which the selection shall proceed after random entry (such as up, down, right or left). An entry is made by rolling a marker (pencil) or placing a finger on the table without the benefit of looking. From this entry point and following the pre-determined path above, the random numbers, as adapted to the sample size, are recorded. If sufficient random numbers are not available on the first pass then the process is repeated until the inspection sample size (n) is reached.

   NOTE: It is recommended that a rectangle, indicating the path to be used, be drawn around the entry numbers. Refer to page 3 of this Attachment.

2 - For systematically packed material, the containers can be numbered to correspond to the system of random numbers.

3 - For bulk packed material, such as small parts/items, they may be strewn onto a "samples distribution board" of numbered spots to correspond to the system of random numbers at hand. Refer to Attachment 12.

4 - For liquid or well-mixed bulk product, the mix/fluidity makes unnecessary the need for random numbers and the sample may be taken from "here and there".

5 - When a "lot" is known to come from different sources the result is actually multiple lots which have been arbitrarily combined. It is necessary to maintain a well-mixed product if sampling is to be used.

   Example: Assume a lot of 58 items and sampling is to be used. A sample size (n) of 12 items is required (refer to Table 2, Sampling Size). The random sample selection process would be as follows:

   A. Tag/mark each item with a unique number from 1 through 58.

ATTACHMENT 3 (Continued)

B. Assume a random entry into the Random Number Table, Table 1, at 3381.

C. The predetermined path is right and down.

D. Draw a rectangle to include the entry 3381 and all entries to the right. Draw a second rectangle to include the entry 3381 and all entries down the table.

E. The adaptation will be to use a double column digit, following the predetermined path, as the selected random number. Duplicate numbers are discarded. When the right most entry is reached, go back to the original entry and record random numbers using two adjacent columns. When the right most entry is reached, go back to the original entry and repeat the process using the 2nd and 3rd column digits to form the random number. When (if) the path to the right is exhausted of random numbers, return to the original entry and repeat the process using the preselected "down" path.

For this example, the random numbers that were selected are:

33, 35, 21, 10, 51, 38, 55, 12, 02, 41, 16, 58

F. Should it happen that insufficient random numbers were not available, then return to step B and repeat the process using a new point of entry.

As many points of entry may be used as necessary to record the required number of random numbers.

IMPORTANT: Unless this process is rigorously followed, for the selection and recording of random numbers, the results will deteriorate into a variety of biases not supportive of the sampling plan's stated purpose.

ATTACHMENT 3 (Continued)

Table 1 Random Number Table*

1306	1189	5731	3968	5606	5084	8947	3897	1636	7810
0422	2431	0649	8085	5053	4722	6568	5044	9040	5121
6597	2022	6168	5060	8656	6733	6364	7649	1871	4328
7965	6541	5645	6243	7658	6903	9911	5740	7824	8520
7695	6937	0406	8894	0441	8135	9797	7285	5905	9539
5160	7851	8464	6789	3938	4197	6511	0407	9239	2232
2961	0551	0539	8288	7478	7565	5581	5771	5442	8761
1428	4183	4312	5445	4854	9157	9158	5218	1464	3634
3666	5642	4536	1561	7849	7520	2547	0756	1206	2033
6543	6799	7454	9052	6689	1946	2574	9386	0304	7945
9975	6080	7423	3175	9377	6951	6519	8287	8994	5532
4866	0956	7545	7723	8085	4948	2228	9583	4415	7065
8239	7068	6694	5168	3117	1586	0237	6160	9585	1133
8722	9191	3386	3443	0434	4586	4150	1224	6204	0937
1330	9120	8785	8382	2929	7085	3109	6742	2468	7025
2296	2952	4764	9070	6356	9192	4012	0618	2219	1109
3582	7052	3132	4519	9250	2486	0830	8472	2160	7046
5872	9207	7222	6494	8973	3545	6967	8490	5264	9821
1134	6324	6201	3792	5651	0538	4676	2064	0584	7996
1403	4497	7390	8503	8239	4236	8022	2914	4368	4329
3393	7025	3381	3553	2128	1021	8353	6413	5161	8583
1137	7896	3602	0060	7850	7626	0854	6565	4260	6220
7437	5198	8772	6927	8527	6851	2709	5992	7383	1071
8414	8820	3917	7238	9821	6073	6658	1280	9643	7761
8398	5224	2749	7311	5740	9771	7826	9533	3800	4553
0995	8935	2939	3092	2496	0359	0318	4697	7181	4035
6657	0755	9685	4017	6581	7292	5643	5064	1142	1297
8875	8369	7868	0190	9278	1709	4253	9346	4335	3769
8399	6702	0586	6428	7985	2979	4513	1970	1989	3105
6703	1024	2064	0393	6815	8502	1375	4171	6970	1201
4730	1653	9032	9855	0957	7366	0325	5178	7959	5371
8400	6834	3187	8688	1079	1480	6776	9888	7585	9998
3647	8002	6726	0877	4552	3238	7542	7804	3933	9475
6789	5197	8037	2354	9262	5497	0005	3986	1767	7981
2630	2721	2810	2185	6323	6576	4931	8336	6662	3566
1374	8625	1644	3342	1587	0762	6057	8011	2666	3759
1572	7625	9110	4409	0239	7059	3415	5537	2250	7292
9678	2877	7579	4935	0449	8119	6969	5383	1717	6719
0882	6781	3538	4090	3092	2365	6001	3446	9985	5007
0006	4205	2389	4365	1981	8158	7784	6256	3842	6003
4611	9861	7916	9305	2074	9462	0254	4827	9198	3974
1093	3784	4190	6332	1175	8599	9735	8584	6581	7194
3374	3545	6865	8819	3342	1676	2264	6014	5012	2458
3650	9676	1436	4374	4716	5548	8276	6235	6742	2154
7292	5749	7977	7602	9205	3599	3880	9537	4423	2330
2353	8319	2850	4026	3027	1708	3518	7034	7132	6903
1094	2009	8919	5676	7283	4982	9642	7235	8167	3366
0568	4002	0587	7165	1094	2006	7471	0940	4366	9554
5606	4070	5233	4339	6543	6695	5799	5821	3953	9458
8285	7537	1181	2300	5294	6892	1627	3372	1952	3028

*Adapted from "Handbook of Statistical Tables" Addison-Wesley Publishing Company, Inc., Reading, Mass., 1962. Courtesy of U.S. Atomic Energy Commission

ATTACHMENT 4
Example of Calculating SQI on Items Without Past History that are "Standard" Nondestruct Tested

Refer to Attachment 14.

LOT/BATCH #1

A lot/batch of 50 items is received from a vendor. No SQI is recorded for the product. "Standard" nondestruct inspect/test the lot using the following sampling SQI (PPM) plan:

$$SQI\ \#\ (PPM) = \frac{p + r}{n} * 10^6$$

p (unknown) = average proportion nonconforming

r (known) = current lot/batch nonconforming

n (known) = sample size established from Attachment 6, Table 2

Step 1-1: Determine a temporary "p"

To establish a temporary "p" do 100% inspection/test or stop on the second nonconforming item if it exists.

Assume item 17 and 20 fail critical criteria, therefore:

Temporary "p" = $2/20 * 10^6$

SQI = 100,000 PPM
p = .1

Reassemble the lot and replace the 20 items.

Step 1-2: Establish sample size from Attachment 6, Table 2.

From the sampling plan table. A lot/batch of 50 (N=50) requires a "normal" nondestruct sample size of ten (10) items, randomly selected (refer to Attachments 2 & 3). Select the sample of ten (10). Inspect/test the sample items. Record the inspection results.

Items marked 3, 5, 7, 9, 8, 11, 19, 22, 26, 28 comprise the selected sample.

Inspection results: Items 8, 11 fail.
Action: Reject lot

ATTACHMENT 4 (Continued)

Step 1-3: Calculate SQI #

SQI = 100,000 PPM r=2 n=10
Temporary "p" = .1

$$\text{SQI \# (PPM)} = \frac{\text{Temp "p"} + r}{n} * 10^6$$

$$= 210,000 \text{ PPM}$$
$$p = .21$$

LOT/BATCH #2

A lot/batch of 30 items (same items and vendor as in LOT/BATCH #1) is received. N=30

Step 2-1: Establish sample size from Attachment 6, Table 2.

N=30
n=8

Refer to Attachment 2 to select a random sample of 8 items. Record the inspection results.

Inspection results: 1 item is in nonconformance
Action: Reject lot

Step 2-2: Based on the following parameters calculate the new SQI #:

SQI = 210,000 PPM r=1 n=8
p = .21

$$\text{new SQI \# (PPM)} = \frac{p + r}{n} * 10^6$$

$$= 151,250 \text{ PPM}$$
$$p = .15$$

ATTACHMENT 4 (Continued)

LOT/BATCH #3

A lot/batch of 40 items (same items and vendor as in LOT/BATCH #1 & #2) is received. N=40

Step 3-1: Establish sample size from Attachment 6, Table 2.

N=40
n=9

Refer to Attachment 2 to select a random sample of 9 items. Record the inspection results.

Inspection results: Zero items are in nonconformance.

Action: Accept lot. There is a 95% confidence that for a large number of random samples drawn from the lot each sample would contain zero nonconformance items.

Step 3-2: Based on the following parameters calculate the new SQI #:

SQI = 151.250 PPM r=0 n=9
p = .15

$$\text{new SQI \# (PPM)} = \frac{p + r}{n} * 10^6$$

= 16.667 PPM
p = .017

LOT/BATCH #4

A lot/batch of 10 items (same items and vendor as in LOT/BATCH #1, #2, & #3) is received. N=10

Step 4-1: Establish sample size from Attachment 6, Table 2.

N=10
n=4

Refer to Attachment 2 to select a random sample of 4 items. Record the inspection results.

ATTACHMENT 4 (Continued)

Inspection results: Zero items are in nonconformance.

Action: Accept lot. There is a 95% confidence that for a large number of random samples drawn from the lot each sample would contain zero nonconformance items.

Step 4-2: Based on the following parameters calculate the new SQI #:

SQI = 16,667 PPM r=0 n=4
p = .017

$$\text{new SQI \# (PPM)} = \frac{p + r}{n} * 10^6$$

= 4,250 PPM
p = .004

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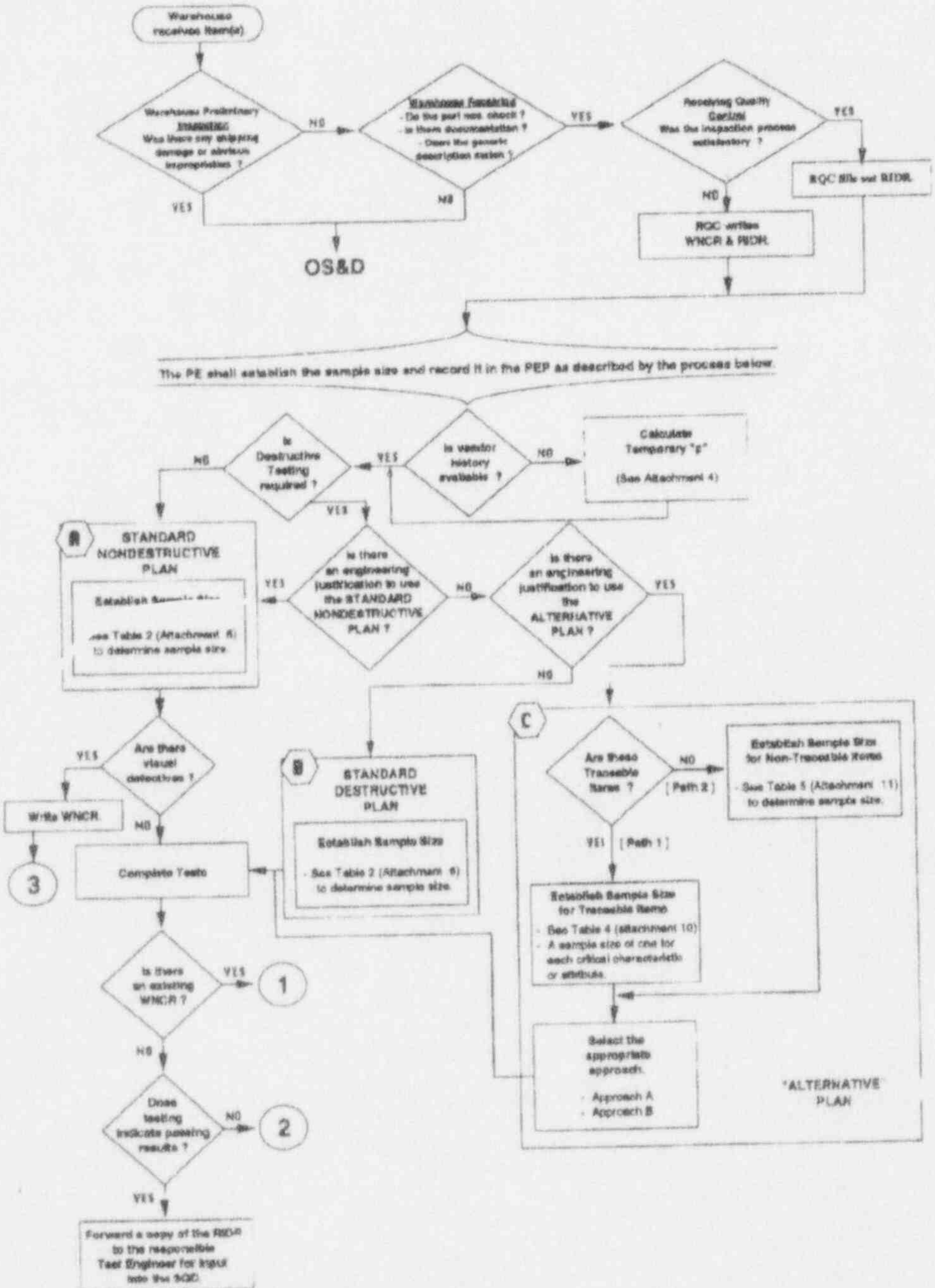
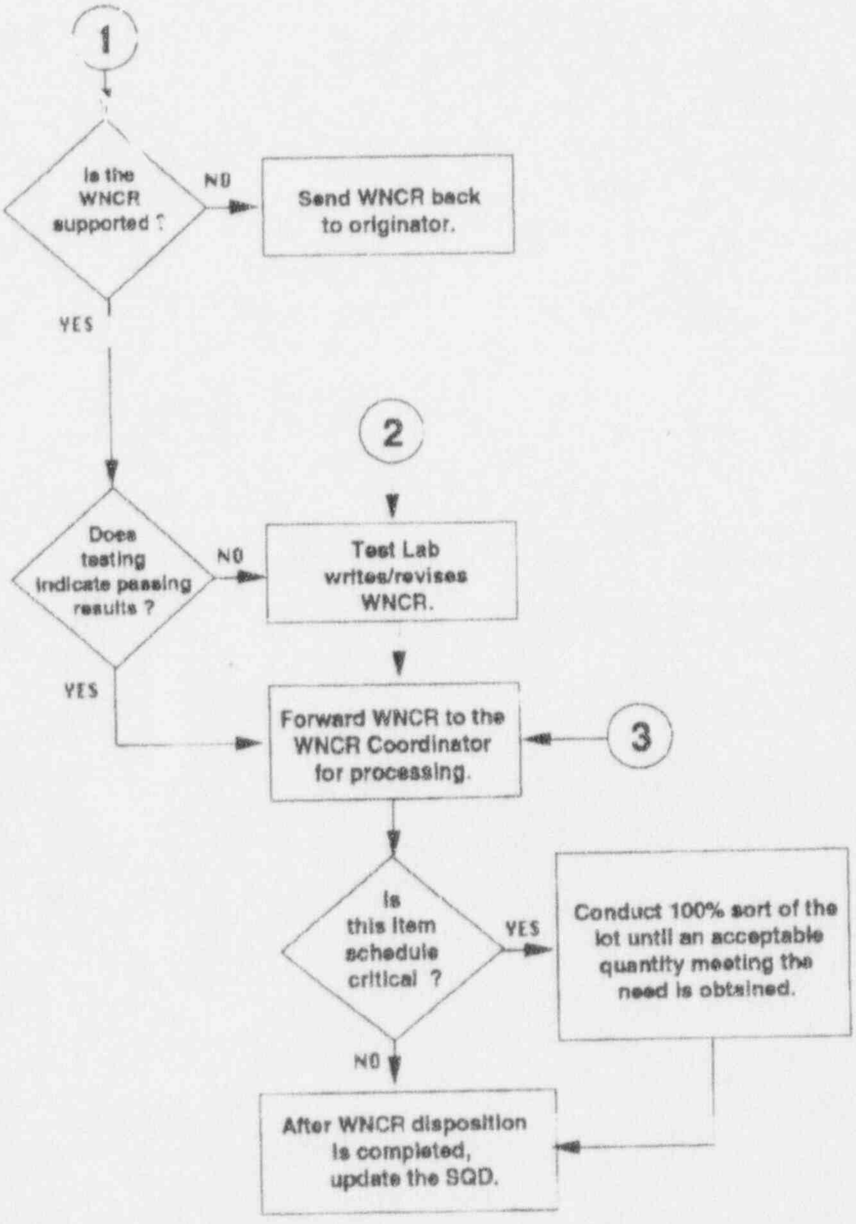
ATTACHMENT 5
SAMPLING PLAN ANALYSIS



ATTACHMENT 5 (Continued)
SAMPLING PROGRAM ANALYSIS (Continued)



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ATTACHMENT 6
Table 2*
"Standard" Nondestructive & "Standard" Destructive
Sampling Size

Lot Size	Sample Size	Lot Size	Sample Size
1	1	40	9
2	2	41	9
3	2	42	10
4	2	43	10
5	3	44	10
6	3	45	10
7	4	46	10
8	4	47	10
9	4	48	10
10	4	49	10
11	4	50	10
12	5	51-56	11
13	5	57-62	12
14	5	63-69	13
15	5	70-76	14
16	5	77-83	15
17	5	84-90	16
18	5	91-96	17
19	5	97-102	18
20	5	103-108	19
21	6	109-114	20
22	6	115-120	21
23	6	121-126	22
24	6	127-132	23
25	7	133-138	24
26	7	139-144	25
27	7	145-150	26
28	7	151-162	27
29	8	163-174	28
30	8	175-186	29
31	8	187-198	30
32	8	199-210	31
33	9	211-225	32
34	9	>225	32
35	9		
36	9		
37	9		
38	9		
39	9		

PCN 1-2

* This table is based on a 95% assurance (consumer risk of 5%) that for a large number of samples drawn from a lot, the lot will have zero nonconforming units. This basis is established by the OC curves in Appendix C of EPRI NP-7218.

ATTACHMENT 7
Table 3
Destructive Test Sample Purchasing Guideline

NOTE: This table is to be used to determine the correct quantity of material when destructive testing is required. This table is designed for test plans which require one set of specimens for destructive testing. For dedication testing which require more than one set of test specimens for destructive testing, contact the CGI Lab Supervisor for the appropriate order quantity.

Need	Order
1	3
2	4
3	6
4	8
5	9
6	10
7	11
8	13
9	14
10	15
11	16
12	17
13	18
14	19
15	20
16	22
17	23
18	24
19	26
20	27
21	28
22	30
23	31
24	32
25	34
26	35
27	36
28	37
29	38
30	39
31	41
32	41
33	43
34	44
35	45
36	46
37	47
38	48
39	49
40	50
41	52
42	53
43	54
44	55
45	56
46	58
47	59
48	60
49	61
50	62
51	64
52	65
53	66
54	67
55	68
56	69
57	71
58	72
59	73
60	74
61	75
62	76
63	78
64	79
65	80
66	81
67	82
68	83
69	85
70	86
71	87
72	88
73	89
74	90
75	92
76	93
77	94
78	95
79	96
80	98
81	99
82	100
83	101
84	102
85	104
86	105
87	106
88	107
89	108
90	110
91	111
92	112
93	113
94	114
95	116
96	117
97	118
98	119
99	120
100	122
101	123
102	124
103	125
104	126
105	128
106	129
107	130
108	131
109	132
110	134
111	135
112	136
113	137
114	138
115	140
116	141
117	142
118	143
119	144
120	146

ATTACHMENT 7 (Continued)
Table 3

Need	Order
121	147
122	148
123	149
124	150
125	152
126	153
127	154
128	155
129	156
130	157
131	158
132	159
133	160
134	161
135	162
136	164
137	165
138	166
139	167
140	168
141	169
142	170
143	171
144	172
145	173
146	174
147	176
148	177
149	178
150	179
151	180
152	181

Need	Order
153	182
154	183
155	184
156	185
157	186
158	188
159	189
160	190
161	191
162	192
163	193
164	194
165	195
166	196
167	197
168	198
169	200
170	201
171	202
172	203
173	204
174	205
175	206
176	207
177	208
178	209
179	210
180	212
181	213
182	214
183	215
184	216

Need	Order
185	217
186	218
187	219
188	220
189	221
190	222
191	223
192	224
193	225
194	226
195	227
196	228
197	229
198	230
199	231
200	232
201	233
202	234
203	235
204	236
205	237
206	238
207	239
208	240
209	241
210	241
211	243
212	244
213	245
214	246
215	247
216	248

Need	Order
217	249
218	250
219	251
220	252
221	253
222	254
223	255
224	256
225	257
226	258
227	259
228	260
229	261
230	262
231	263
232	264
233	265
234	266
235	267
236	268
237	269
238	270
239	271
240	272
241	273
242	274
243	275
244	276
245	277
*	
*	
*	

* To any needed quantity greater than 245, add 32 for destructive test purposes.

ATTACHMENT 8
EXAMPLE of an ENGINEERING JUSTIFICATION to
SUBSTITUTE a NONDESTRUCTIVE TEST for a DESTRUCTIVE TEST

DESTRUCTIVE TEST CALLED OUT BY PEP:

Tensile strength, yield strength, elongation, reduction of area.

SPECIFICATION: ASTM A193 Grade B7M

LOT QUANTITY: 60

DESTRUCTIVE SAMPLING SIZE: 12

DESTRUCTIVE METHOD of TEST: per ASTM F606

NONDESTRUCTIVE TEST: Hardness Testing

NONDESTRUCTIVE METHOD of TEST: per ASTM F606

NONDESTRUCTIVE SAMPLING SIZE: 60 - 100% of the lot

REASON for NONDESTRUCTIVE TESTING:
No spare parts available for destructive testing. The long manufacture lead time is unsatisfactory for the outage.

JUSTIFICATION:
Hardness has a direct correlation with tensile in this specification. Hardness criteria for testing is HRB 94-HRB 99. In addition to hardness, a chemical analysis shall be performed to the standard nondestructive sample size of 12 to ensure carbon content is within the specification range of 37-49 %.

With the assurance of the hardness and carbon content criteria meeting the requirements of the ASTM A193 Grade B7M specification, and the increase in sample size to 60 in evaluating hardness, it can be concluded that there is reasonable assurance of not compromising product quality.

ATTACHMENT 9

Example of Calculating SQI on Items With Past History that are "Standard" Nondestruct and "Alternate" Tested

Refer to Attachment 14

LOT/BATCH #A1

A lot/batch of 20 items is received from a vendor. A previous SQI has already been established for the product. The PEP requires "normal" nondestructive testing for lot acceptance, also "alternative" destructive testing for three critical characteristics, "A", "B", and "C". "A" and "B" can be tested using the same item.

In this case it was economically advantageous to conduct "normal" nondestructive testing prior to "alternative" destructive testing. An engineering correlation justified using the "alternate" destruct schedule.

Step A1-1: Confirm the previous:

SQI (PPM) = 20,000
p = .02

Step A1-2: "Normal" Nondestructive Testing

Establish sample size from Attachment 6, Table 2.

N=20
n=5

Refer to Attachment 2 to select a random sample of 5 items. Record the inspection results.

Inspection results: Zero items are in nonconformance.

Action: Prepare for "alternative" destructive testing.

Step A1-3: "Alternative" Testing

Establish sample size from Attachment 10, Table 4. (Traceable Items)

ATTACHMENT 9 (Continued)

In this case there are two items that shall be "alternate" destruct tested. The first item shall be used for testing critical characteristics "A" and "B", the second item shall be used for testing critical characteristic "C". A sample size of 2 shall therefore be established. Select the 2 samples from the previously 5 samples selected.

n=2

Refer to Attachment 2 to select a random sample of 2 items. Record the inspection results.

Inspection results: Zero items are in nonconformance.

Action: Accept the lot/batch.

NOTE: If any of the "alternative" destructive tests failed, the entire lot/batch would have been rejected.

Step A1-4: Based on the following parameters calculate the new SQI #:

SQI=20,000 PPM   r=0   n=5
p=.02

$$\text{new SQI \# (PPM)} = \frac{p + r}{n} * 10^6$$

$$= 4,000 \text{ PPM}$$

$$p = .004$$

ATTACHMENT 10
Table 4
Sample Size for "Alternative" Testing
of Critical Characteristics
(Traceable Items)

No. of Unique Characteristics	Sample Size
1	1
2	2
3	3
4	4
5	5
n	n

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ATTACHMENT 11
Table 5*
Sample Size for "Alternative" Testing
(Non-Traceable Items)

Lot Size	Sample Size	Lot Size	Sample Size
1	1	36	4
2	1	37	4
3	1	38	4
4	1	39	4
5	1	40	4
6	2	41	4
7	2	42	5
8	2	43	5
9	2	44	5
10	2	45	5
11	2	46	5
12	2	47	5
13	2	48	5
14	3	49	5
15	3	50	5
16	3	51-63	6
17	3	64-76	7
18	3	77-90	8
19	3	91-102	9
20	3	103-114	10
21	3	115-126	11
22	3	127-138	12
23	3	139-150	13
24	3	151-175	14
25	4	176-200	15
26	4	201-225	16
27	4	>225	16
28	4		
29	4		
30	4		
31	4		
32	4		
33	4		
34	4		
35	4		

* This table is based on a 95% assurance (consumer risk of 5%) that for a large number of samples drawn from a lot, the lot will have zero nonconforming units. This basis is established by the OC curves in Appendix C of EPRI NP-7218.

ATTACHMENT 12
BASIS for CALCULATING the SQI

Hypergeometric Probability Distribution Equation

The hypergeometric probability distribution equation shown below is based on Electronic Industries Association (EIA) Standard EIA-585, "Zero Acceptance Number Sampling Procedures and Tables for Inspection by Attributes of Isolated Lots," June 1991.

$$P(a) = \frac{(N-Np)!\ (N-n)!}{(N-Np-n)!\ N!}$$

where,

P(a) = probability of lot acceptance i.e., the probability that all items of the sample will be conforming.

N = lot quantity

p = average proportion of nonconforming items (expressed as a decimal)

n = number of randomly selected items from a lot/batch without replacement (sample size).

! = factorial mathematics

Method of Calculation of SQI (PPM)

The SQI in PPM equation is based on EIA Standard EIA-555, "Lot Acceptance Procedure for Verifying Compliance With the Specified Quality Levels (SQL) in PPM," January 1989.

The calculation of SQI (nonconformance level) in PPM is as follows:

$$SQI\ \#\ (PPM) = \left(\frac{p + r}{n}\right) 10^6$$

where,

p = average proportion of nonconforming items. (See note below)

r = number of sample items classified by inspection/test as nonconforming.

n = number of randomly selected items from a lot/batch without replacement (sample size).

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ATTACHMENT 12 (Continued)

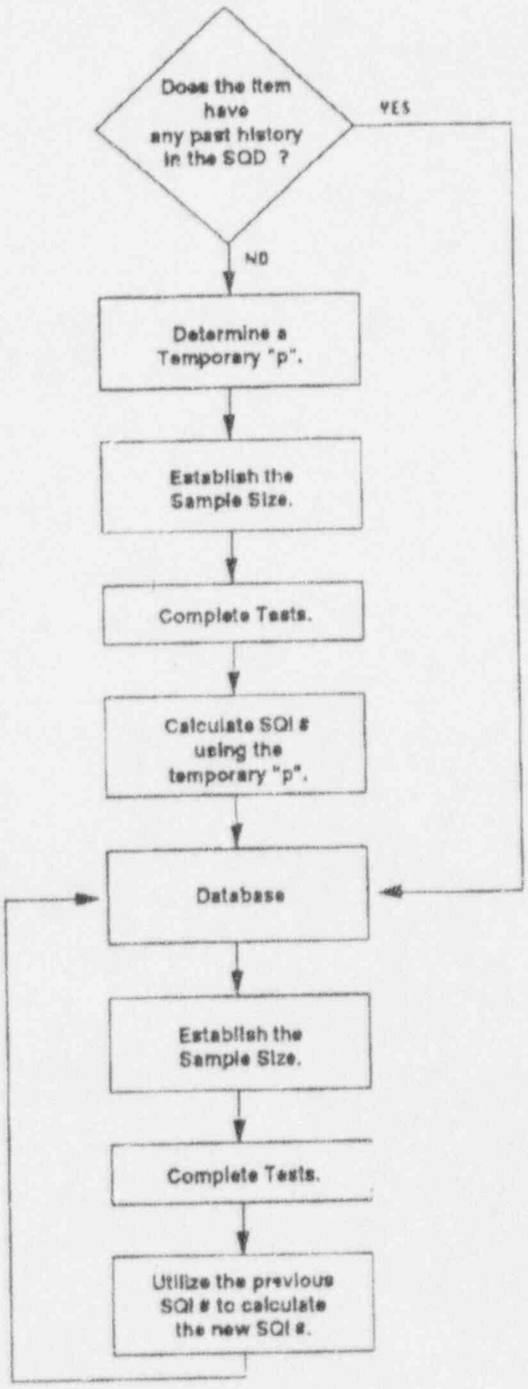
This equation establishes a 95% assurance (consumer risk of 5%) that for a large number of samples drawn from a lot, the lot will have zero nonconforming units.

NOTE: If there has not been any previous vendor history record established, then a minimum of five (5) consecutive lots, within a two (2) year time period, shall be sampled before calculating the first SQI. If this is not practical, then an equivalent SQI shall be calculated using a temporary "p." Refer to Attachment 4.

ATTACHMENT 13
SAMPLE DISTRIBUTION BOARD

1	11	21	31	41	51	61	71
2	12	22	32	42	52	62	72
3	13	23	33	43	53	63	73
4	14	24	34	44	54	64	74
5	15	25	35	45	55	65	75
6	16	26	36	46	56	66	76
7	17	27	37	47	57	67	77
8	18	28	38	48	58	68	78
9	19	29	39	49	59	69	79
10	20	30	40	50	60	70	80

ATTACHMENT 14
SUPPLIER QUALITY INDEX ANALYSIS IN PPM



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*** ACTIVITY REPORT ***
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