ATTACHMENT 1

PROPOSED SNUBBER FUNCTIONAL TESTS
TECHNICAL SPECIFICATION CHANGES

NO CHANGES

PLANT SYSTEMS

3/4.7.8 SNUBBERS

LIMITING CONDITION FOR OPERATION

3.7.8 All snubbers listed in Tables 3.7-4a and 3.7-4b shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4. MODES 5 and 6 for snubbers located on systems required OPERABLE in those MODES.

ACTION:

With one or more snubbers inoperable, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status and perform an engineering evaluation per Specification 4.7.8g. on the attached component or declare the attached system inoperable and follow the appropriate ACTION statement for that system.

SURVEILLANCE REQUIREMENTS

4.7.8 Each snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirements of Specification 4.0.5.

a. Inspection Types

As used in this specification, type of snubber shall mean snubbers of the same design and manufacturer, irrespective of capacity.

b. Visual Inspections

Snubbers are categorized as inaccessible or accessible during reactor operation and may be treated independently. The accessibility of each snubber shall be determined and approved by the Station Health Physicist or qualified designee prior to performing each visual inspection. The determination shall be based upon the then existing radiation levels in each snubber location and the expected time to perform the visual inspection and shall be in accordance with the recommendations of Regulatory Guides 8.8 and 8.10.

The first inservice visual inspection of each type of snubber shall be performed after 4 months but within 10 months of commencing POWER OPERATION and shall include all snubbers listed in Tables 3.7-4a and 3.7-4b. If less than two snubbers of each type are found inoperable during the first inservice visual inspection, the second inservice visual inspection shall be performed 12 months ± 25% from the date of the first inspection. Otherwise, subsequent visual inspections shall be performed in accordance with the following schedule:

NO CHANGES

SURVEILLANCE REQUIREMENTS (Continued)

No. Inoperable Snubbers of Each Type Found During Inspection	Time Until Subsequent Visual Inspection*#
0	18 months ± 25%
1	12 months ± 25%
2	6 months ± 25%
3,4	124 days ± 25%
5,6,7	62 days ± 25%
8 or more	31 days ± 25%

c. Refueling Outage Inspections

At each refueling, the systems which have the potential for a severe dynamic event, specifically, the main steam system (upstream of the main steam isolation valves) the main steam safety and power-operated relief valves and piping, auxiliary feedwater system, main steam supply to the auxiliary feedwater pump turbine, and the letdown and charging portion of the CVCS system shall be inspected to determine if there has been a severe dynamic event. In case of a severe dynamic event, mechanical snubbers in that system which experienced the event shall be inspected during the refueling outage to assure that the mechanical snubbers have freedom of movement and are not frozen up. The inspection shall consist of verifying freedom of motion using one of the following: (1) manually induced snubber movement; (2) evaluation of in-place snubber piston setting; (3) stroking the mechanical snubber through its full range of travel. If one or more mechanical snubbers are found to be frozen up during this inspection, those snubbers shall be replaced or repaired before returning to power. The requirements of Specification 4.7.8b. are independendent of the requirements of this specification.

d. Visual Inspection Acceptance Criteria

Visual inspections shall verify: (1) that there are no visible indications of damage or impaired OPERABILITY, and (2) attachments to the foundation or supporting structure are secure. Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, provided that: (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible;

* The inspection interval for each type of snubber shall not be lengethened more than one step at a time unless a generic problem has been identified and corrected; in that event the inspection interval may be lengthened one step the first time and two steps thereafter if no inoperable snubbers of that type are found.

The provisions of Specification 4.0.2 are not applicable.

d. Visual Inspection Acceptance Criteria (Continued)

and (2) the affected snubber is functionally tested in the as found condition and determined OPERABLE per Specification 4.7.8f. When a fluid port of a hydraulic snubber is found to be uncovered the snubber shall be declared inoperable and shall not be determined OPERABLE via functional testing unless the test is started with the piston in the as-found setting, extending the piston rod in the tension mode direction. All snubbers connected to an inoperable common hydraulic fluid reservoir shall be counted as inoperable snubbers.

e. Functional Tests

During the first refueling shutdown and at least once per refueling thereafter, a representative sample of snubbers shall be tested using one of the following sample plans. The sample plan shall be selected prior to the test period and cannot be changed during the test period. The NRC shall be notified of the sample plan selected prior to the test period.

1) At least 10% of the snubbers required by Specification 3.7.8 shall be functionally tested either in place or in a bench test. For each snubber that does not meet the functional test acceptance criteria of Specification 4.7.8f., an additional 10% of the snubbers shall be functionally tested until no more failures are found or until all snubbers have been functionally tested; or

2) A representative sample of the snubbers required by Specification 3.7.8 shall be functionally tested in accordance with Figure 4.7-1. "C" is the total number of snubbers found not meeting the acceptance requirements of Specification 4.7.8f (FAILURES). The cumulative number of snubbers tested is denoted by "N." ~~At the end of each day's testing, the new values of "N" and "C" (previous day's total plus current day's increments) shall be plotted on Figure 4.7-1. If at any time the point plotted falls in the "Reject" region all snubbers shall be functionally tested~~. If at any time the point plotted falls in the "Accept" region, testing of snubbers may be terminated. When the point plotted lies in the "Continue Testing" region, additional snubbers shall be tested until the point falls in the "Accept" region ~~or the "Reject" region~~, or all the snubbers required by Specification 3.7.8 have been tested. Testing equipment failure during functional testing may invalidate that day's testing and allow that day's testing to resume anew at a later time, providing all snubbers tested with the failed equipment during the day of equipment failure are retested; or

TEST RESULTS SHALL BE PLOTTED SEQUENTIALLY IN THE ORDER OF SAMPLE ASSIGNMENT (I.E. EACH SNUBBER SHALL BE PLOTTED BY ITS ORDER IN THE RANDOM SAMPLE ASSIGNMENT NOT BY THE ORDER OF TESTING).

3) An initial representative sample of fifty-five (55) snubbers shall be functionally tested. For each snubber which does not meet the functional test acceptance criteria, another sample of

AMENDMENT NO. (UNIT 1)
AMENDMENT NO. (UNIT 2)

NO CHANGES

SURVEILLANCE REQUIREMENTS (Continued)

e. Functional Tests (Continued)

at least one-half the size of the initial sample shall be tested until the total number tested is equal to the initial sample size multiplied by the factor, 1 + C/2, where "C" is the number of snubbers found which do not meet the functional test acceptance criteria. This plan be plotted using an "Accept" line which follows the equation N = 55(1 + C/2). Each snubber should be plotted as soon as it is tested. If the point plotted falls on or below the "Accept" line, testing may be discontinued. If the point plotted falls above the "Accept" line, testing must continue unless all snubbers have been tested.

The representative samples for the functional test sample plans shall be randomly selected from the snubbers required by Specification 3.7.8 and reviewed before beginning the testing. The review shall ensure as far as practical that they are representative of the various configurations, operating environments, range of sizes, and capacities. Snubbers placed in the same locations as snubbers which failed the previous functional test shall be retested at the time of the next functional test but shall not be included in the sample plan. If during the functional testing, additional sampling is required due to failure of only one type of snubber, the functional testing results shall be reviewed at that time to determine if additional samples should be limited to the type of snubber which has failed the functional testing.

f. Functional Test Acceptance Criteria

The snubber functional test shall verify that:

1) Activation (restraining action) is achieved within the specified range in both tension and compression, except that inertia dependent, acceleration limiting mechanical snubbers may be tested to verify only that activation takes place in both directions of travel;

2) Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range;

3) Where required, the force required to initiate or maintain motion of the snubber is within the specified range in both direction of travel; and

4) For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.

Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

g. Functional Test Failure Analysis

An engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the

(NO CHANGES)

SURVEILLANCE REQUIREMENTS (Continued)

g. Functional Test Failure Analysis (Continued)

failure. The results of this evaluation shall be used, if applicable, in selecting snubbers to be tested in an effort to determine the OPERABILITY of other snubbers irrespective of type which may be subject to the same failure mode.

For the snubbers found inoperable, an engineering evaluation shall be performed on the components to which the inoperable snubbers are attached. The purpose of this engineering evaluation shall be to determine if the components to which the inoperable snubbers are attached were adversely affected by the inoperability of the snubbers in order to ensure that the component remains capable of meeting the designed service.

If any snubber selected for functional testing either fails to activate or fails to move, i.e., frozen-in-place, the cause will be evaluated and, if caused by manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be evaluated in a manner to ensure their OPERABILITY. This testing requirement shall be independent of the requirements stated in Specification 4.7.8e. for snubbers not meeting the functional test acceptance criteria.

h. Functional Testing of Repaired and Replaced Snubbers

Snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the functional test result shall be tested to meet the functional test criteria before installation in the unit. Mechanical snubbers shall have met the acceptance criteria subsequent to their most recent service, and freedom-of-motion test must have been performed within 12 months before being installed in the unit.

i. Snubber Seal Replacement Program

The seal service life of hydraulic snubbers shall be monitored to ensure that the service life is not exceeded between surveillance inspections. The expected service life for the various seals, seal materials, and applications shall be determined and established based on engineering information and the seals shall be replaced so that the expected service life will not be exceeded during a period when the snubber is required to be OPERABLE. The seal replacements shall be documented and the documentation shall be retained in accordance with Specification 6.10.2.

NO CHANGES

TABLE 3.7-4a

SAFETY-RELATED HYDRAULIC SNUBBERS*

ITT-GRINNELL

SYSTEM**	SMALL SIZE (1,250 Lbs. or Less TO 3,000 Lbs)	MEDIUM SIZE (10,350 Lbs. to 27,300 Lbs)	LARGE SIZE (45,500 Lbs. to 68,200 Lbs)
UNIT 1			
AS	5	1	0
BB	43	1	1
CA	60	4	0
CF	15	68	1
FW	10	11	0
KC	26	18	0
KD	14	0	0
KF	3	0	0
KR	2	1	0
LD	8	0	0
NB	42	0	0
NC	58	5	8#
ND	34	8	0
NF	6	0	0
NI	58	18	0
NM	24	0	0
NS	16	1	0
NV	102	3	0
RN	10	8	0

*Snubbers may be added or deleted without prior License Amendment to Table 3.7-4a provided that a revision to Table 3.7-4a is included with the next License Amendment request. In lieu of any other report required by Specification 6.9.1, at least 15 days prior to the deletion of any listed snubber, a Special Report shall be prepared and submitted to the Commission in accordance with Specification 6.9.2 evaluating the safety significance of the proposed snubber removal.

**A listing of individual snubbers and more detailed information shall be available for NRC review at the McGuire Nuclear Station.

#Plus 8 steam gen. -- Paul-Monroe, Hyd. Size 2,755,000 Lb. also exempt from functional testing.

N= CHANGES

TABLE 3.7-4a (Continued)

SAFETY-RELATED HYDRAULIC SNUBBERS*

ITT-GRINNELL

SYSTEM**	SMALL SIZE (1,250 Lbs. or Less TO 3,000 Lbs)	MEDIUM SIZE (10,350 Lbs. to 27,300 Lbs)	LARGE SIZE (45,500 Lbs. to 68,200 Lbs)
RV	15	0	0
SM	4	68	29
SV	1	0	0
TE	0	1	0
VE	2	0	0
VN	10	0	0
VQ	3	1	0
VX	4	0	0
WL	3	0	0
YA	1	0	0
YC	6	0	0
ZD	2	0	0
Subtotal (Unit 1)	587	217	38
UNIT 2			
CA	13	1	0
CF	1	6	0
FW	1	2	0
KC	3	0	0
NB	3	0	0
NC	0	0	8#

*Snubbers may be added or deleted without prior License Amendment to Table 3.7-4a provided that a revision to Table 3.7-4a is included with the next License Amendment request. In lieu of any other report required by Specification 6.9.1, at least 15 days prior to the deletion of any listed snubber, a Special Report shall be prepared and submitted to the Commission in accordance with Specification 6.9.2 evaluating the safety significance of the proposed snubber removal.

**A listing of individual snubbers and more detailed information shall be available for NRC review at the McGuire Nuclear Station.

#Plus 8 steam gen. -- Paul-Monroe, Hyd. Size 2,755,000 Lb. also exempt from functional testing.

NO CHANGES

TABLE 3.7-4a (Continued)

SAFETY-RELATED HYDRAULIC SNUBBERS*

SYSTEM**	SMALL SIZE (1,250 Lbs. or Less TO 3,000 Lbs)	MEDIUM SIZE (10,350 Lbs. to 27,300 Lbs)	LARGE SIZE (45,500 Lbs. to 68,200 Lbs)
ND	5	1	0
NI	6	1	0
NS	2	0	0
NV	4	0	0
SM	0	40	10
SV	3	0	0
Subtotal (Unit 2)	41	51	18
TOTAL FOR UNITS 1 & 2	628	268	56

*Snubbers may be added or deleted without prior License Amendment to Table 3.7-4a provided that a revision to Table 3.7-4a is included with the next License Amendment request. In lieu of any other report required by Specification 6.9.1, at least 15 days prior to the deletion of any listed snubber, a Special Report shall be prepared and submitted to the Commission in accordance with Specification 6.9.2 evaluating the safety significance of the proposed snubber removal.

**A listing of individual snubbers and more detailed information shall be available for NRC review at the McGuire Nuclear Station.

NO CHANGES

TABLE 3.7-4b

SAFETY-RELATED MECHANICAL SNUBBERS*

PACIFIC SCIENTIFIC

SYSTEM**	SMALL SIZE (350 Lbs. or Less TO 600 Lbs)	MEDIUM SIZE (1,487 Lbs. to 15,000 Lbs)	LARGE SIZE (50,000 Lbs. to 120,000 Lbs)
UNIT 1			
AS	0	2	0
BB	92	31	0
BW	6	2	0
CA	2	18	0
CF	5	9	0
FW	1	9	1
KC	16	23	1
KF	2	2	0
NB	30	3	0
NC	24	50	1
ND	6	12	1
NF	0	3	0
NI	20	25	0
NM	20	8	0
NV	43	35	0
RF	0	2	0
RN	2	9	11
RV	13	11	0
SA	0	8	0
SM	0	10	8

*Snubbers may be added or deleted without prior License Amendment to Table 3.7-4b provided that a revision to Table 3.7-4b is included with the next License Amendment request. In lieu of any other report required by Specification 6.9.1, at least 15 days prior to the deletion of any listed snubber, a Special Report shall be prepared and submitted to the Commission in accordance with Specification 6.9.2 evaluating the safety significance of the proposed snubber removal.

**A listing of individual snubbers and more detailed information shall be available for NRC review at the McGuire Nuclear Station.

NO CHANGES

TABLE 3.7-4b (Continued)

SAFETY-RELATED MECHANICAL SNUBBERS*

PACIFIC SCIENTIFIC

SYSTEM**	SMALL SIZE (350 Lbs. or Less TO 600 Lbs)	MEDIUM SIZE (1,487 Lbs. to 15,000 Lbs)	LARGE SIZE (50,000 Lbs. to 120,000 Lbs)
SV	0	3	0
VE	1	3	0
VI	30	1	0
VQ	0	2	0
WG	2	0	0
WL	8	0	0
WS	2	0	0
YC	1	1	0
Subtotal (Unit 1)	326	282	23
UNIT 2			
BB	67	55	0
CA	9	59	0
CF	13	80	8
FW	0	4	1
KC	66	81	0
KD	3	1	0
KF	2	5	0
LD	0	2	0
NB	5	1	0
NC	100	95	2
ND	29	41	0

*Snubbers may be added or deleted without prior License Amendment to Table 3.7-4b provided that a revision to Table 3.7-4b is included with the next License Amendment request. In lieu of any other report required by Specification 6.9.1, at least 15 days prior to the deletion of any listed snubber, a Special Report shall be prepared and submitted to the Commission in accordance with Specification 6.9.2 evaluating the safety significance of the proposed snubber removal.

**A listing of individual snubbers and more detailed information shall be available for NRC review at the McGuire Nuclear Station.

NO CHANGES

TABLE 3.7-4b (Continued)

SAFETY-RELATED MECHANICAL SNUBBERS*

PACIFIC SCIENTIFIC

SYSTEM**	SMALL SIZE (350 Lbs. or Less TO 600 Lbs)	MEDIUM SIZE (1,487 Lbs. to 15,000 Lbs)	LARGE SIZE (50,000 Lbs. to 120,000 Lbs)
NF	2	2	0
NI	56	55	3
NM	42	11	0
NR	10	8	0
NV	170	69	0
RF	1	3	0
RN	28	34	1
RV	9	8	0
SA	9	12	0
SM	2	24	30
SV	0	1	0
TE	1	3	0
VE	3	2	0
VG	1	2	0
VI	26	1	0
VN	0	4	0
VQ	3	1	0
VS	1	0	0
VX	2	1	0
WL	15	7	0
WN	0	2	0
Subtotal (Unit 2)	675	674	45
TOTAL for UNITS 1 and 2	1,001	956	65

*Snubbers may be added or deleted without prior License Amendment to Table 3.7-4b provided that a revision to Table 3.7-4b is included with the next License Amendment request. In lieu of any other report required by Specification 6.9.1, at least 15 days prior to the deletion of any listed snubber, a Special Report shall be prepared and submitted to the Commission in accordance with Specification 6.9.2 evaluating the safety significance of the proposed snubber removal.

**A listing of individual snubbers and more detailed information shall be available for NRC review at the McGuire Nuclear Station.

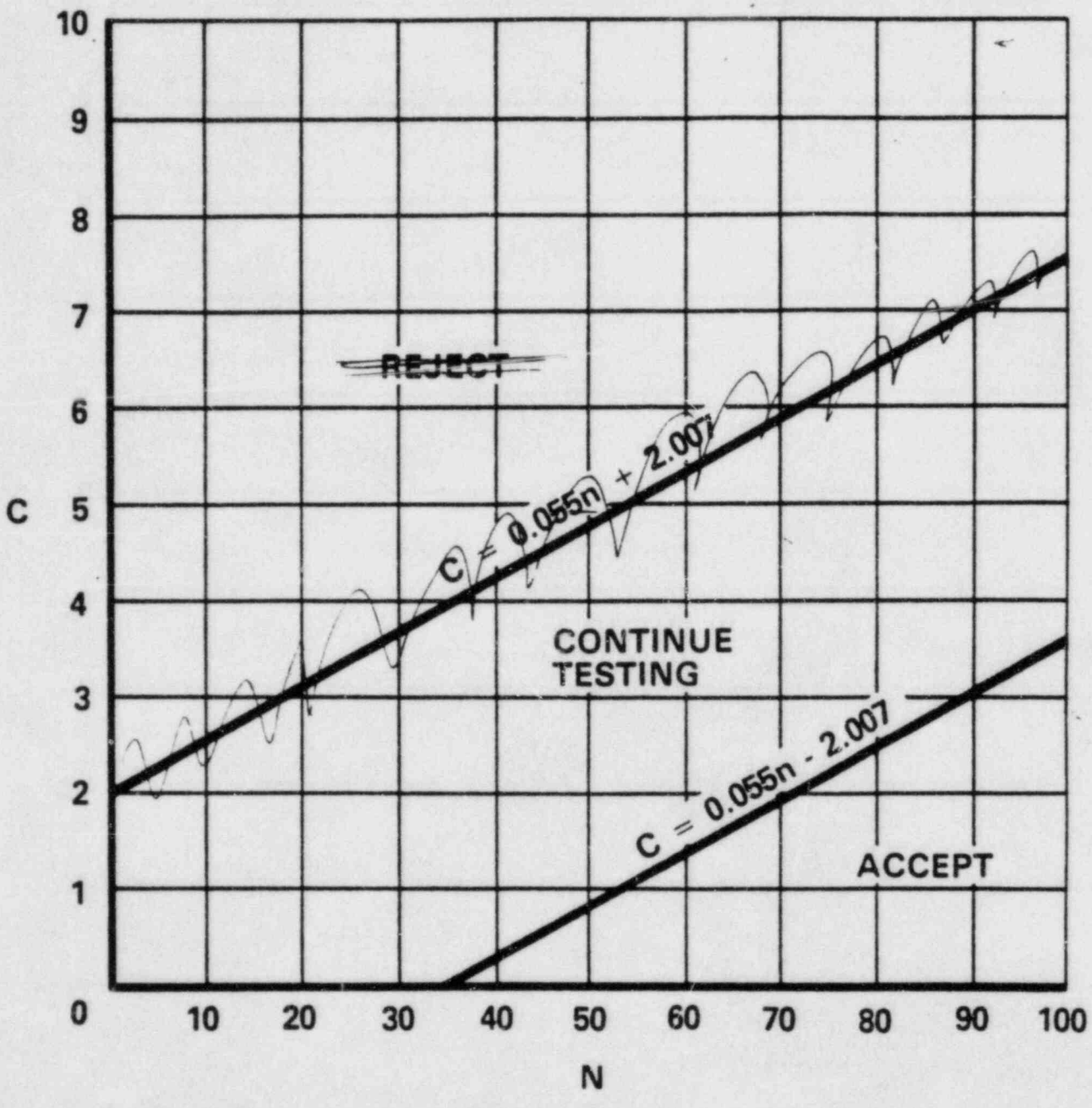


FIGURE 4.7-1
SAMPLE PLAN 2) FOR SNUBBER FUNCTIONAL TEST

AMENDMENT NO. (UNIT 1)
AMENDMENT NO. (UNIT 2)

3/4.7.8 SNUBBERS

All snubbers are required OPERABLE to ensure that the structural integrity of the Reactor Coolant System and all other safety-related systems is maintained during and following a seismic or other event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on nonsafety-related systems and then only if their failure or failure of the system on which they are installed, would have no adverse effect on any safety-related system.

Snubbers are classified and grouped by design and manufacturer but not by size. For example, mechanical snubbers utilizing the same design features of the 2 kip, 10 kip, and 100 kip capacity manufactured by Company "A" are of the same type. The same design mechanical snubbers manufactured Company "B" for the purposes of this specification would be of a different type, as would hydraulic snubbers from either manufacturer.

The visual inspection frequency is based upon maintaining a constant level of snubber protection to systems. Therefore, the required inspection interval varies inversely with the observed snubber failures and is determined by the number of inoperable snubbers found during an inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

To provide assurance of snubber functional reliability one of the three sampling and acceptance criteria methods are used:

1. Functionally test 10% of a type of snubber with an additional 10% tested for each functional testing failure, or

2. Functionally test a sample size and determine sample acceptance or ~~rejection~~ CONTINUE TESTING* using Figure 4.7-1, or

3. Functionally test a representative sample size and determine sample acceptance or rejection using the stated equation.

Figure 4.7-1 was developed using "Wald's Sequential Probability Ratio Plan" as described in "Quality Control and Industrial Statistics" by Acheson J. Duncan.

Permanent or other exemptions from the surveillance program for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and, if applicable, snubber life destructive testing was performed to qualify the snubber for the applicable design conditions at either the completion of their fabrication or at a subsequent date. Snubbers so exempted shall continue to be listed in Tables 3.7-4a and 3.7-4b with footnotes indicating the extent of the exemptions.

* IF TESTING CONTINUES TO BETWEEN 100-200 SNUBBERS (OR 1-2 WEEKS) AND STILL THE ACCEPT REGION HAS NOT BEEN REACHED, THEN THE ACTUAL % OF POPULATION QUALITY (C/N) SHOULD BE USED TO PREPARE FOR EXTENDED OR 100% TESTING.

AMENDMENT NO. (UNIT 1)
AMENDMENT NO. (UNIT 2)

NO CHANGES

SNUBBERS (Continued)

The service life of a snubber is established via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubber, seal replaced, spring replaced, in high radiation area, in high temperature area, etc. . .). The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life. The requirements for the maintenance of records and the snubber service life review not intended to affect plant operation.

3/4.7.9 SEALED SOURCE CONTAMINATION

The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(c) limits for plutonium. This limitation will ensure that leakage from Byproduct, Source, and Special Nuclear Material sources will not exceed allowable intake values.

Sealed sources are classified into three groups according to their use, with Surveillance Requirements commensurate with the probability of damage to a source in that group. Those sources which are frequently handled are required to be tested more often than those which are not. Sealed sources which are continuously enclosed within a shielded mechanism (i.e., sealed sources within radiation monitoring or boron measuring devices) are considered to be stored and need not be tested unless they are removed from the shielded mechanism.

3/4.7.10 FIRE SUPPRESSION SYSTEMS

The OPERABILITY of the Fire Suppression Systems ensures that adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located. The Fire Suppression System consists of the water system, spray, and/or sprinklers, Halon, and fire hose stations. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility fire protection program.

In the event that portions of the Fire Suppression Systems are inoperable, alternate backup fire-fighting equipment is required to be made available in the affected areas until the inoperable equipment is restored to service. When the inoperable fire-fighting equipment is intended for use as a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the inoperable equipment is the primary means of fire suppression.

ATTACHMENT 2

JUSTIFICATION AND SAFETY ANALYSIS

McGuire Nuclear Station Units 1 and 2 Technical Specification surveillance requirement 4.7.8.e is proposed to be changed in light of a recent NRC review of the "37" Snubber Functional Test Plan in the draft OM-4 document (ASME Section XI, Inspection Requirements). On March 7, 1985 Duke Power Company representatives along with other members of the OM-4 Working Group and the NRC met to resolve concerns with the "37" Plan in OM-4. The "37" plan in OM-4 corresponds to plan 2 in Tech. Spec. 4.7.3 Section e. In fact the "37" plan in OM-4 was taken from the MNS Tech. Spec.

The concerns with the "37" Plan in OM-4 were: 1) the necessity of the reject line (Figure 1 Tech. Spec. 4.7.8), and 2) when and how to plot test results (sequentially, at the end of the sample, or at the end of the day). Both concerns were resolved in light of statistical evidence which eliminated the practical need for the reject line (reference Attachment 2A). Elimination of the reject line in turn resolved the issue of test results plotting: it is to be plotted sequentially in the order of sample selection; not by testing order. Based on these conclusions a re-write of the OM-4 draft document was agreed to by all present. In light of these agreed-upon changes to the OM-4 document and due to the practical risk (2%) of rejecting a good population (necessitating 100% functional test) with the current "37" Plan Reject Line (Tech. Spec. 4.7.8.e Plan 2), changing the current MNS 1 and 2 Tech. Spec. will alleviate any possibility of unnecessary 100% testing of the McGuire Unit 1 and/or 2 snubber populations during future refueling outages. The changes allow for deletion of the reject line in McGuire T.S. Figure 4.7-1. As long as the reject line remains in the plan there is some possibility of rejecting a good population which would consequently require an unnecessary 100% testing of approximately 1600 snubbers with attendant ALARA and safety concerns (e.g., due to decontamination efforts, testing of "hot" snubbers, danger in physically accessing/removing certain snubbers), manpower utilization, outage extension, and other problems.

ATTACHMENT 2A

DUKE POWER COMPANY
GENERAL OFFICES
422 SOUTH CHURCH STREET
CHARLOTTE, N. C. 28242

P. O. BOX 33189

TELEPHONE: AREA 704
373-4011

February 27, 1985

Re: O&M-4 Task Force
Functional Test Sampling Plan

As agreed upon at our 2/15/85 meeting in Bethesda, we have performed some parameter studies using the Wald sequential sampling plan equations from page 345 of "Applied Statistics for Engineers", and using the O&M-4 37 plan as a base. Results follow:

Series I (See Attached Sheet Labled "Series I")

P_1 = Quality (% Bad) of a good population = .025

α = Probability of rejecting a good population

Variable = .10 thru zero

P_2 = Quality (% Bad) of a bad population = .10

β = Probability of accepting a bad population = .05

Series II

P_1 = Variable = .01 thru .05

α = .05

P_2 = .10

β = .05

Series III

P_1 = .025

α = .05

P_2 = Variable = .10, .11

β = .05

The results of Series I seem most interesting. Changing α, the probability of rejecting a good population had no significant impact on the accept line. The slopes were identical, and for α varying from .10 to .001, the lower intercept (H_L) changed only from 1.97 to 2.04. On the other hand, the smaller we made α, the higher the reject line went. When we set α = 0, the reject line disappeared completely ($h_u \to \infty$).

Inspection of the equations shows why this occurs. α & β are not in the slope equation, and α is a very weak parameter in the h_1 equation.

A major change in the reject line caused only a tiny change in the accept line, while continuing to accept a marginal population (10% Bad) only 5% of the time. In a practical sense, that proves that acceptance is independent of rejection. Since when we plot impacts only on rejection, acceptance is independent of when we plot.

We have been thinking that there must be an impact of non-rejection on acceptance, in that some campaigns with bad populations that would have rejected on a plot-by-snubber basis, but would not reject on a plot-by-lot basis. Subsequently, the campaign could accept and thereby increase the probability of false acceptance to > 5%. The logic is sound, but we may be misjudging the magnitude of the effect. Referring to Figure 1, we can see that only two points (n = 37, C = 3&4) need be considered. (C < 3 always accepts, C > 4 always rejects, regardless of which method of plotting is used).

With a 10% bad population, the probability of arriving at (n = 37, C = 3), rejecting on the way, is only about 2%. From that point on, the probability of false acceptance is about 2%, so the total probability of false acceptance by this route is $(.02)^2 = .0004$ which is negligible. The probability of arriving at (37, 4), rejecting on the way, is about 20%, and the probability of a false acceptance from there is less that 2%. Also negligible. These two points are too close to the reject line, and too far from the accept line to have much chance of accepting. (I hope you will check those calculations independently).

This indicates that the probability of false acceptance of a bad population is real but negligible, which is consistent with the results of the Series 1 studies on the Wald. It is also consistent with what David Rubenstein told us on 2/15/85, and what he told us on 1/8/81. (With David Rubenstein's copy of this letter, I am including a copy of Ralph Birkel's 1/15/81 summary of that meeting to help David reconstruct that event).

Series II, Wald curves show a dependence of the accept line on P_1, the estimated quality of a good population. The curves are bunched up to $P_1 = .03$, with slope and intercepts offsetting in the region of interest. At $P_1 = .04$ the offset effect begins to dominate, and at $P_1 = .05$ the effect is clear.

We should confirm our judgement that P_1 should be in the 2.5% range. I believe the confirmation is in the curves plotted on Figure 2. The amount of testing required and the risk of rejection are clearly unacceptable at 4% bad (37 Plan), and, at 2 + % with the 55 plan. (We'll have more confidence in our calculation of the risk of rejection by the 3/7/85 meeting.) If I were free to do it over, I believe I would pick P_1 between 2% and 2½%, $\alpha = .01$.

That's probably more than you can stand for now. See you March 7.

Very truly yours,

T. F. Wyke, Chief Engineer
Mechanical and Nuclear Division

D M Collings/emf

By: D. M. Collings, Senior Engineer

DMC:emf

Attachments

ACCEPTANCE OF 10% BAD POPULATION

DRAFT

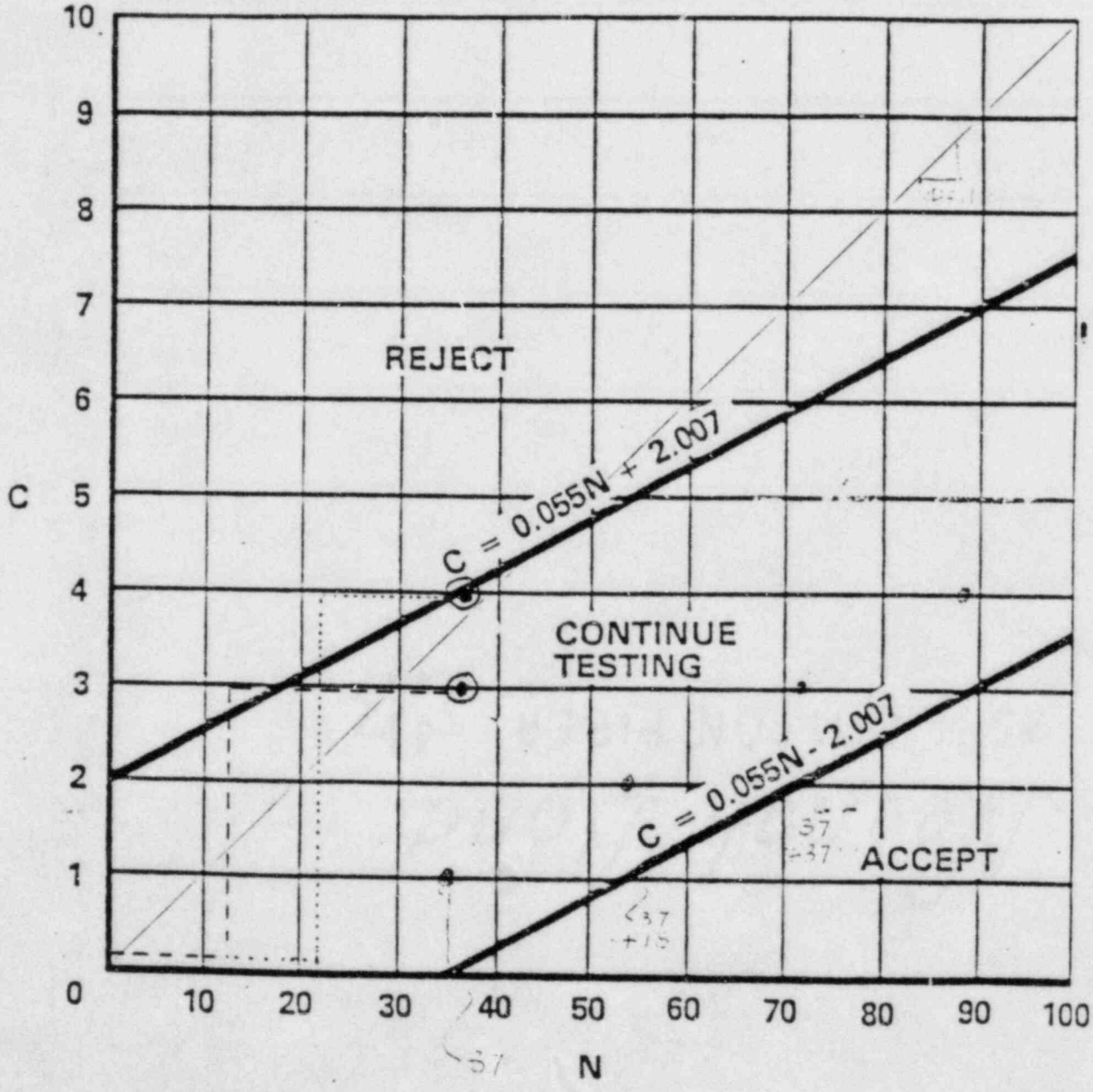


FIGURE 1

~~FIGURE 4.7-1~~

SAMPLE PLAN 2) FOR SNUBBER FUNCTIONAL TEST

DUKE POWER COMPANY

Form 00184 (6-81)

FIGURE 2

1-17-84

Dev./Station COMPARISON OF "37" & "55" Unit SAMPLING PLANS :

Subject "AVERAGE" n_t & PROBABILITY OF CROSSING REJECT LINE AS FUNCTIONS OF % OF POPULATION BAD Date

Sheet No. ___ of ___ Problem No. ___ Checked By ___ Date ___

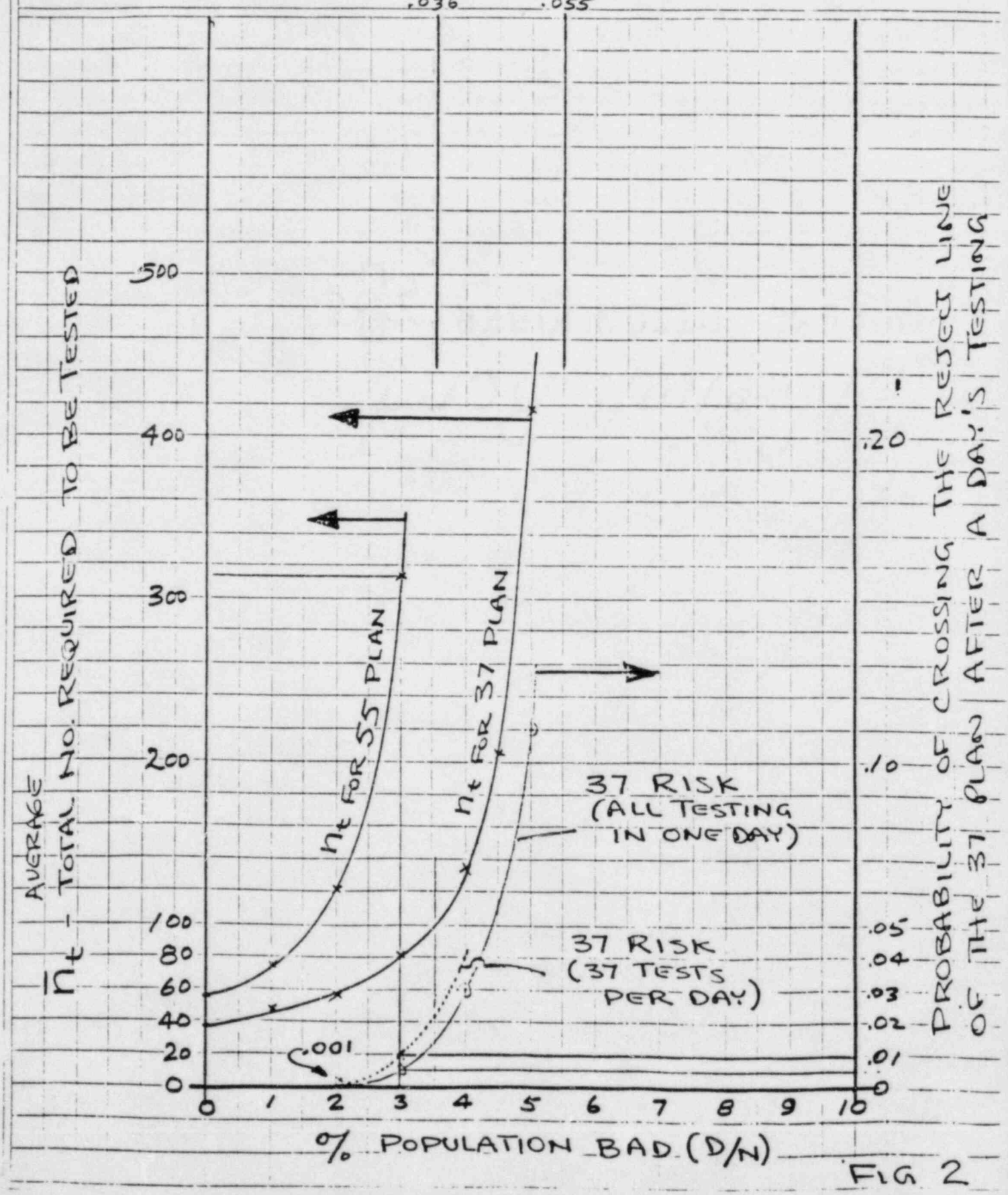


FIG 2

DUKE POWER COMPANY

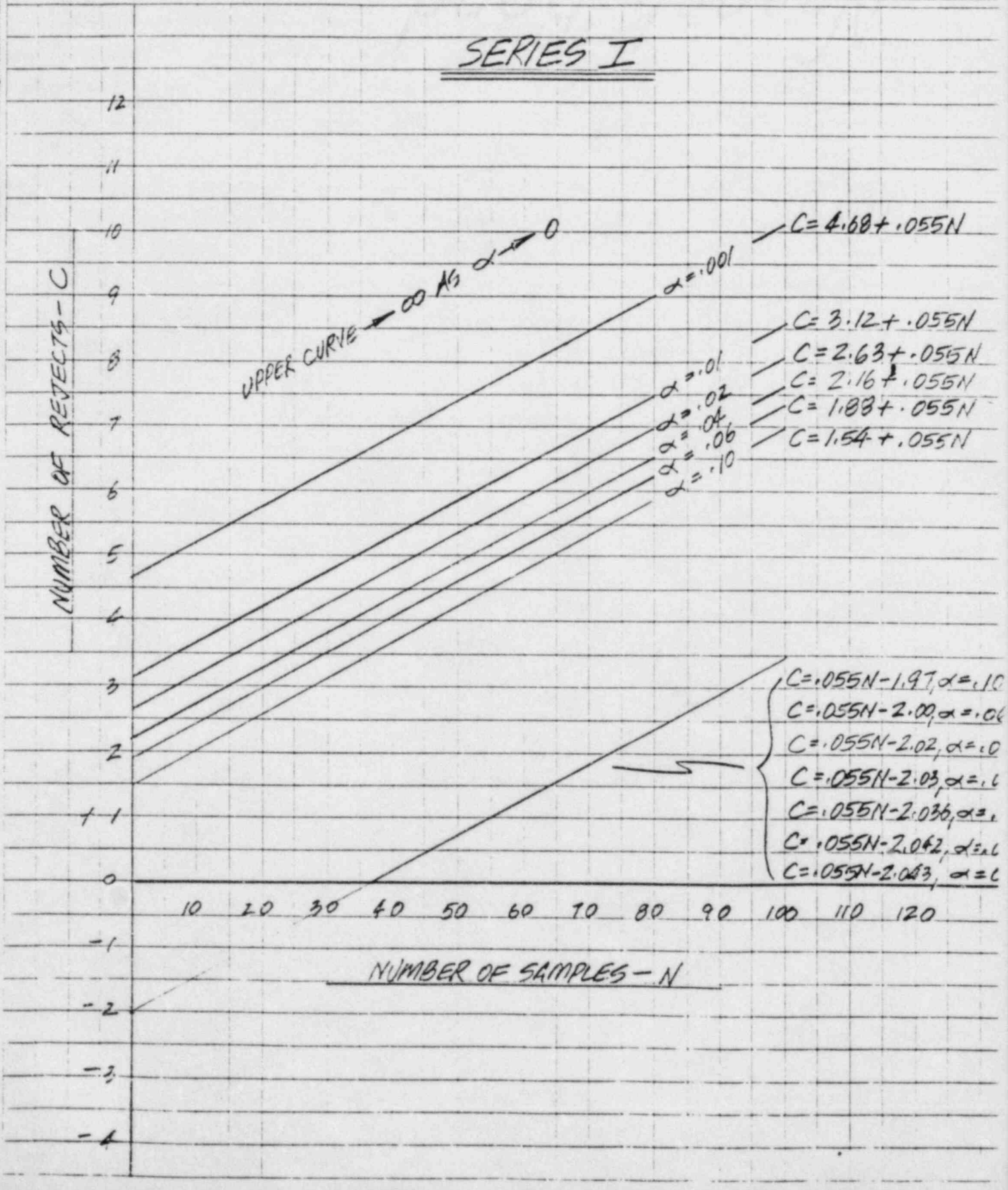
Form 00184 (6-81)

Dev./Station _____ Unit ____ File No. _____

Subject WALD'S SEQUENTIAL ANALYSIS $P_1 = .025$, $P_2 = .10$, $B = .05$

By _____ Date _____

Sheet No. ___ of ____ Problem No. _____ Checked By _____ Date _____



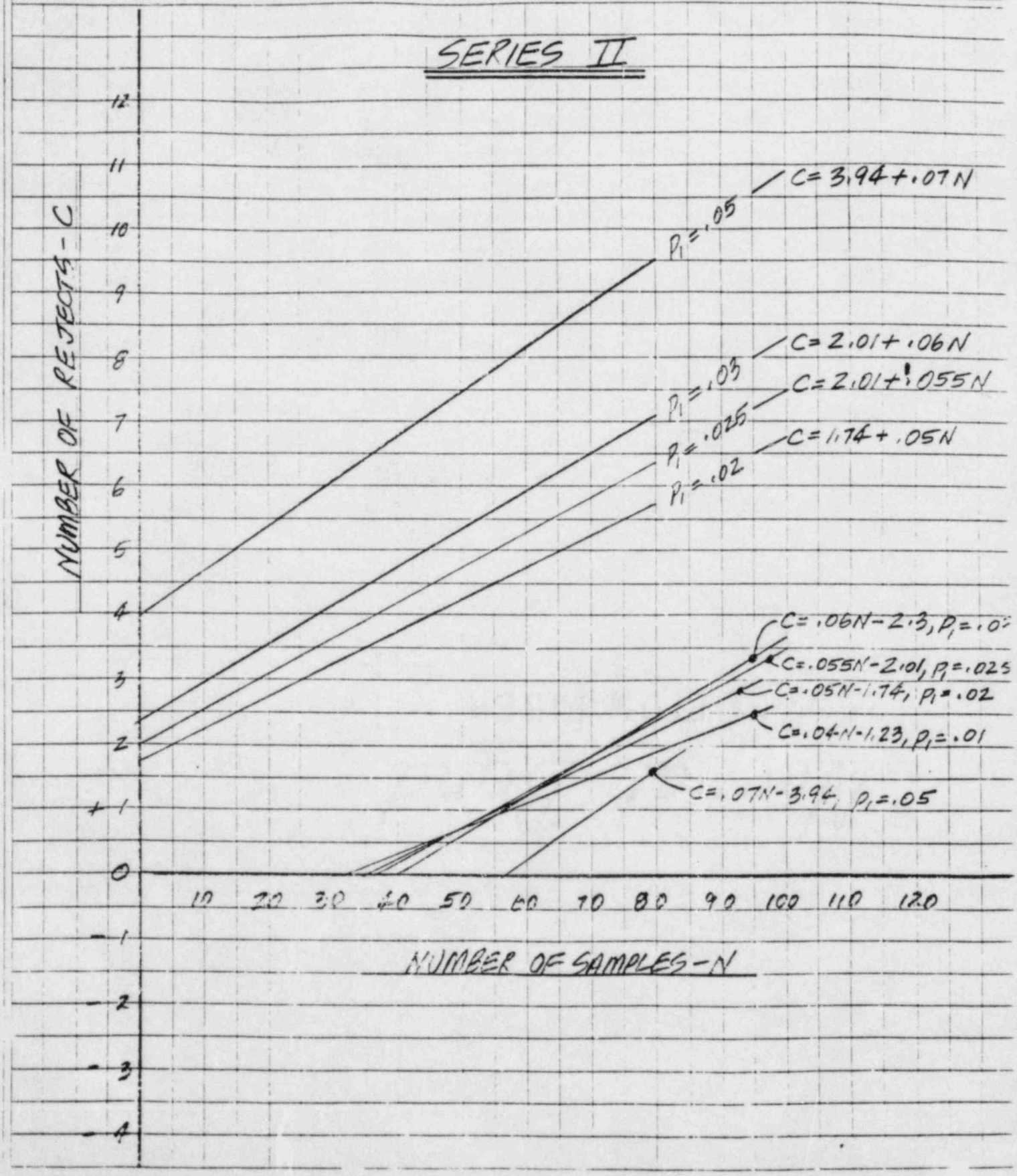
Dev./Station _____ Unit _____ File No. _____

Subject WALD'S SEQUENTIAL ANALYSIS $\alpha = .05$, $P_2 = .10$, $\beta = .05$

By _____ Date _____

Sheet No. ___ of _____ Problem No. _____ Checked By _____ Date _____

SERIES II

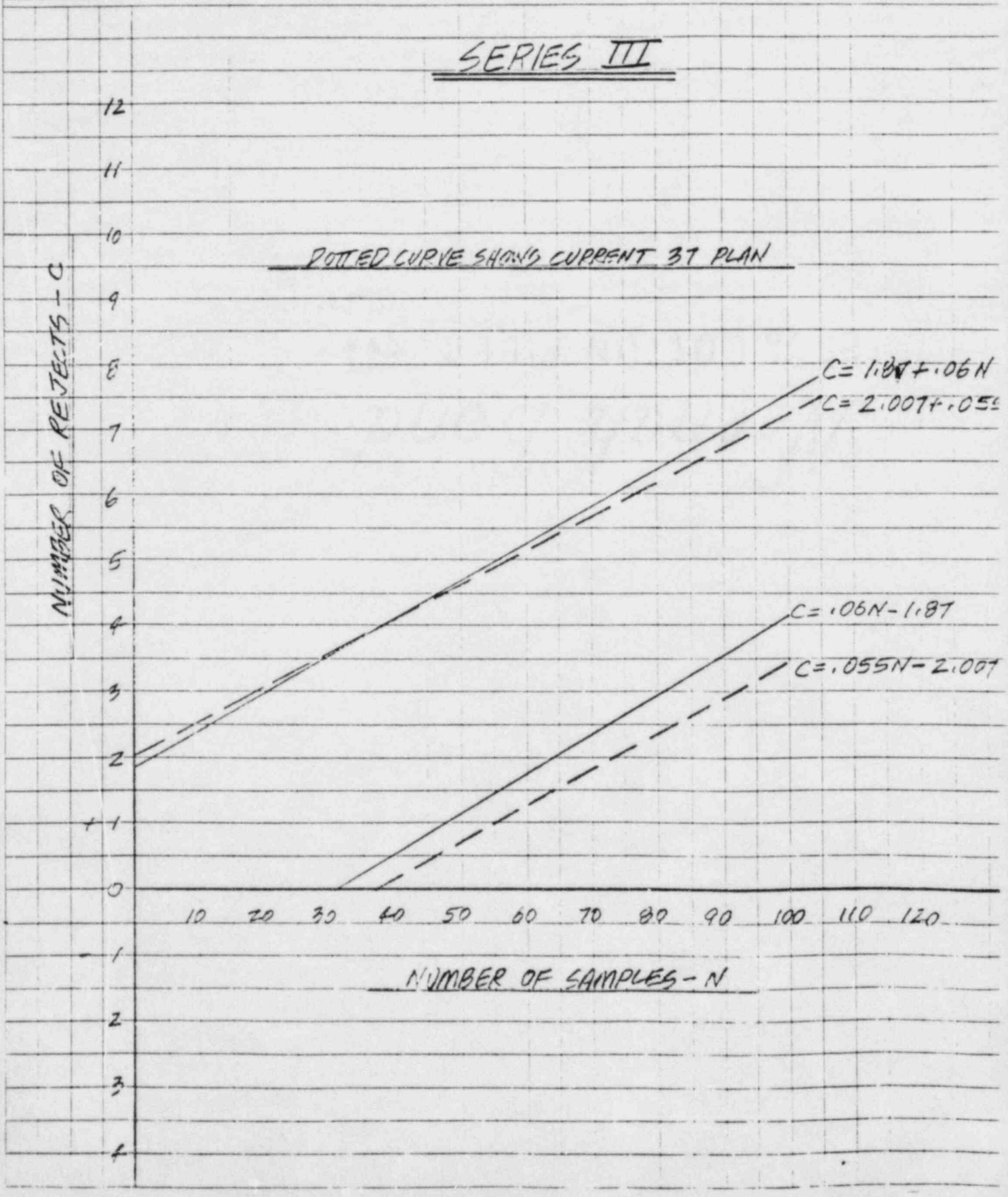


Dev./Station _____ Unit ____ File No. _____

Subject WALD'S SEQUENTIAL ANALYSIS $P_1 = .025$, $\alpha = .05$, $P_2 = .11$, $\beta = .05$ COMPARED TO CURRENT 37 PLAN

By _____ Date _____

Sheet No. ___ of ____ Problem No. _____ Checked By _____ Date _____



O&M-4 Task Force

David Rubenstein (301) 492-4723
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555 (216)

Horace Shaw (301) 492-4420
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555 (P522)

Richard J. Kiessel (301)-492-8119
U. S. Nuclear Regulatory Commission
Mail Stop EW-359
Washington, D. C. 20555

Frank DiCola
Stone & Webster Engr. Co.
P. O. Box 5200
Cherry Hill, N. J. 08034

David Hafley (615) 870-6661
Tennessee Valley Authority
1240 Chesnut Street
Chattanoogo, Tenn 37401

Stuart Lindsey
Duke Power Company
Nuclear Production

Woody J. Bailey
Duke Power Company

Glen Palmer (804) 847-3329
B&W
3110 Odd Fellows Road
Lynchburg, Virginia 24501

ATTACHMENT 3

ANALYSIS OF SIGNIFICANT HAZARDS CONSIDERATION

As required by 10 CFR 50.91, this analysis is provided concerning whether the proposed amendments involve significant hazards considerations, as defined by 10 CFR 50.92. Standards for determination that a proposed amendment involves no significant hazards considerations are if operation of the facility in accordance with the proposed amendment would not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated; or 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety.

The proposed amendments basically redefine McGuire Technical Specification Surveillance Requirement 4.7.8.e Snubber Functional Test Sample Plan No. 2 in view of a recent NRC review of the "37" test plan in the draft OM-4 document (ASME Section XI, Inspection Requirements) to alleviate any possibility of unnecessary 100% testing of the McGuire Unit 1 and/or 2 snubber populations during future refueling outages. This plan is one of three sampling and acceptance criteria methods used to provide assurance of snubber functional reliability. Since snubbers are required operable to ensure that the structural integrity of the reactor coolant system and all other safety-related systems is maintained during and following a seismic or other event initiating dynamic loads and can have no effect on cause mechanisms, and since only surveillance requirements are affected and not the limiting condition for operation, the proposed amendments would not involve a significant increase in the probability of an accident previously evaluated or create the possibility of a new or different kind of accident from any accident previously evaluated. Although the proposed amendments do not involve changes in surveillance frequency nor operating conditions, they do involve changes in surveillance methods and acceptance criteria. However, statistical evidence indicates that while the probability of false acceptance of a bad population under the proposed amendments is real, it is negligible. Consequently the proposed amendments would not involve a significant reduction in a margin of safety or a significant increase in the consequences of an accident previously evaluated.

Based upon the preceding analyses, Duke Power Company concludes that the proposed amendments do not involve a significant hazards consideration.