AVSSD-0323-67-CR
Revision 1

STERILIZATION ASSEMBLY DEVELOPMENT LABORATORY

"CMTM BIOLOGICAL MONITORING PLAN"

PHASE II

10 October 1967
Task 7
JPL CONTRACT 951624

THIS WORK WAS PERFORMED FOR THE JET PROPULSION LABORATORY, CALIFORNIA INSTITUTE OF TECHNOLOGY, SPONSORED BY THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION UNDER CONTRACT NAS7-100.

Prepared by

AVCO CORPORATION
SPACE SYSTEMS DIVISION
Lowell, Massachusetts

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JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA

CFSTI PRICE(S) $
Hard copy (HC) 3.00
Microfiche (MF)
ff 653 July 65

FACILITY FORM 602
N68-22524 (ACCESSION NUMBER)
(THRU)
94 (PAGES)
1 (CODE)
CR#94370 (NASA CR OR TMX OR AD NUMBER)
05 (CATEGORY)

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PHASE II

10 October 1967
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JPL CONTRACT 951624

PREPARED BY: Paul A. Kales
P. A. Kales
AVCO CORPORATION

APPROVED BY: E. J. Lunney
E. J. Lunney
AVCO CORPORATION

APPROVED BY: Dr. E. A. Botan
Dr. E. A. Botan
AVCO CORPORATION

APPROVED BY: W. W. Paik
W. W. Paik
JET PROPULSION LABORATORY

APPROVED BY: G. H. Redmann
G. H. Redmann
JET PROPULSION LABORATORY

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA

CHANGES

Page No.	Description	Date
AVSSD-0323-67-CR	Initial Issue	15 August 1967
AVSSD-0323-67-CR	Revision 1	10 October 1967

-NOTE-

This report contains information prepared by AVCO Corporation, Space Systems Division, under JPL subcontract. Its content is not necessarily endorsed by the Jet Propulsion Laboratory, California Institute of Technology, or the National Aeronautics and Space Administration

A B S T R A C T

This report defines the locations for the bioassay coupons to be attached to the surfaces of the CMTM sub-system assemblies for removal during assembly operations. Included are coupon removal schedules, the designation of coupons to be assayed, and modifications which can be applied to the schedule for conducting related studies.

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I. INTRODUCTION

This report defines coupon locations and the removal schedule to be applied to the Capsule Mechanical Training Model (CMTM) for the evaluation of surface microbial burden during assembly operations. The discussion makes reference to the SADL assembly operation, which presumes an ETO exposure prior to admission into the Sterile Assembly Development Laboratory (SADL). It is also presumed that the system will be built according to the prescribed SADL operations procedure. However, provisions have been made to accommodate variations to the plan, including assembly in a high bay area, assembly under a laminar flow tent, and a quarantine period for the CMTM after the buildup.

Acknowledgement must be made to Keith Bateman for preparation of the drawings in Appendix E.

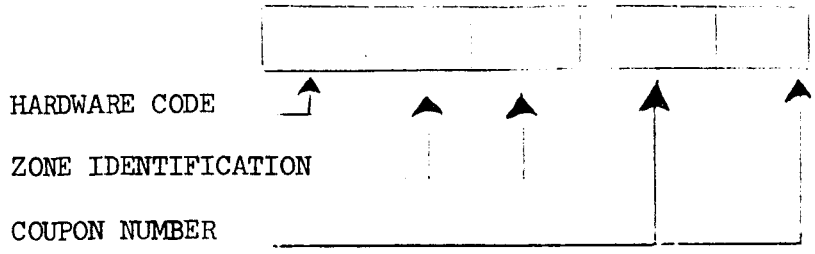
II. COUPON IDENTIFICATION.

This design calls for 1390 coupons to be used. Many of these will be decoys, which will not be assayed. This is discussed in section IV.

A five character code will be used for identifying each coupon, and it will also identify the subsystem assembly and location. The first character will be a letter identifying the subsystem assembly to which the coupon is attached. The letter A will indicate that the coupon will be attached to part of the aeroshell, B to the band assembly clamp, C to the sterilization canister, D to part of the seven dummy chassis or live data encoder, I to the impact limiter, M to the deorbit motor, P to the parachute canister, R to the relay link antenna, S to the payload structure, and U to the umbilical chord assembly.

The next two characters will be a two digit number identifying the zone. The final two digit number will identify the coupon number within the zone. As an example, coupon number A04-07 is the seventh coupon of the fourth zone of the aeroshell assembly.

Figure 1. Identification of Coupons



Zones 1 and 2 of the aeroshell are the only zones which have more than 100 coupon assignments. An X as the second character will indicate a coupon number between 100 and 199, and a Y will indicate a coupon between 200 and 299. As examples, the first coupon of zone 1 of the aeroshell assembly will be identified as A01-01, the one hundredth will be identified AX1-00, and the two hundredth will be AY1-00.

III. COUPON PLACEMENT.

A Task 7 requirement was to identify coupon locations on the CMTM subsystem assembly surfaces. The locations for 1390 coupons are identified by crosses marked on the hardware surfaces. Coupon identification numbers are also marked on the hardware surfaces at the proper locations.

It is expected that the coupons will be placed approximately within two inches of the location marks. They should be placed in a manner which will preclude their impeding the assemblers, which will minimize the chance of their falling off during transportation and assembly, and which will facilitate application and removal at the proper time.

Appendix D describes and identifies the zones and lists the number of coupons to be used in each. The number of coupons to be used in each zone can also be taken from Appendix A. Appendix E contains subsystem assembly drawings which illustrate the locations for the coupons.

The time at which the coupons are to be attached will be specified along with the instructions for each assembly plan. The next section deals with the time at which the coupons are to be removed.

IV. COUPON REMOVAL.

There will be nine removal periods during the SADL assembly operations.

1. Post FA, as the parts arrive into the SADL from the ETO chamber, just prior to the buildup.

2. After the eight chassis are assembled to the payload assembly and the appropriate Quality Assurance checks are completed.

3. After the impact limiter is lowered onto the payload structure assembly.

4. After the aeroshell is assembled onto the payload structure assembly.

5. After the parachute canister is assembled onto the payload structure.

6. After the deorbit motor is assembled to the payload structure assembly.

7. After the assembly of the relay antenna. At this point the CMTM is built.

8. After the CMTM is lowered into the sterilization canister bottom and the umbilical cord is being pulled through its port and connected to its plate.

9. After the systems test, just prior to mating the sterilization canister cover.

At each of these nine operations, the coupons designated for removal and assay are to be taken off first. These coupons must remain identified, and the date and time of removal must be recorded. The schedule in Appendix B lists the coupons to be removed for assay during each of the nine operations. If a coupon designated for removal is lost, accidentally falls off, or for some other reason cannot be used for an assay, the nearest dummy coupon can be substituted. Appendix A identifies which are the dummy coupons.

In addition to providing substitutes when a coupon designated for an assay cannot be used, the dummy coupons also serve as decoys for the assemblers to reduce bias when the CMTM hardware is being handled. These however must be taken off from zones before they are to be occluded by the next assembly operation. Their removal, which can be a more careless one, should take place after the coupons destined for assays are removed, identi-

fied and dated. Appendix B lists the zones from which all the (dummy) coupons are to be removed during each operation.

Use the drawings of Appendix E to help locate the coupons.

V. POSSIBLE MODIFICATIONS.

A. High Bay and Laminar Flow Tent Assemblies.

For a normal SADL assembly operation, there will be a total of 500 coupons to be assayed. There are also plans for a series of buildups outside the SADL. These will not be preceded by the FA test or by the ETO treatment. Also, the CMTM will not be assembled into the sterilization canister. Hence, application of the schedules of Appendix B will lead to less than 500 assayed coupons.

B. CMTM Quarantine Period.

During some buildups a quarantine period will be required after the CMTM is built. In these cases, additional coupons will be removed for assay. The removal schedule for the quarantine period termination appears in Appendix C.

When a quarantine period is to take place, there will be no dummy coupon removal at Estimation Point 7. The dummy coupons scheduled for removal at Estimation Point 7 will be removed after the quarantine period instead.

The date and time of the quarantine period must be recorded when the coupons to be assayed are removed. The coupons to be assayed should be removed before the dummy coupons are removed.

The coupons scheduled to be removed for assay after the quarantine period in Appendix C will be dummy coupons during assembly operations for which there will be no quarantine period.

C. Dummy Coupons.

At the risk of minimizing or of eliminating the bias protection, some of the dummy coupons may be eliminated from the placement schedule. Budgetary considerations may make it necessary to attach only those coupons which are to be assayed or to merely reduce the quantity of dummy coupons. Appendix A will be helpful in revising the coupon attachment schedule.

APPENDIX A

DISPOSITION OF COUPONS

ON THE CMTM SURFACES

CMTM STERILIZATION PROGRAM

DISPOSITION OF COUPONS

Page 1 of 7

CODE: 1 = To be removed during assembly Estimation Point 1, and assayed.
d = Dummy coupon, to be removed but not assayed.
Qd = To be removed after the quarantine period, and assayed. To be a dummy coupon if there is no quarantine period.

A01-01 d	A01-29 7	A01-57 9	A01-85 d	AX1-13 d	AX1-41 d	AX1-69 9	AX1-97 Qd
02 7	30 Qd	58 9	86 Qd	14 9	42 d	70 d	98 d
03 Qd	31 3	59 9	87 7	15 d	43 5	71 1	99 3
04 d	32 7	60 Qd	88 3	16 d	44 d	72 d	AY1-00 d
05 5	33 Qd	61 9	89 d	17 d	45 d	73 3	01 9
06 d	34 d	62 7	90 9	18 3	46 d	74 d	02 d
07 5	35 9	63 3	91 d	19 9	47 d	75 7	03 Qd
08 d	36 5	64 d	92 d	20 9	48 d	76 Qd	04 7
09 9	37 d	65 d	93 5	21 d	49 3	77 d	05 9
10 3	38 d	66 d	94 d	22 d	50 d	78 9	06 d
11 5	39 d	67 d	95 3	23 Qd	51 d	79 d	07 5
12 3	40 d	68 d	96 d	24 3	52 d	80 d	08 3
13 d	41 9	69 d	97 5	25 7	53 3	81 5	09 d
14 d	42 d	70 d	98 7	26 7	54 d	82 d	10 d
15 d	43 5	71 d	99 Qd	27 Qd	55 1	83 d	A02-01 d
16 d	44 d	72 9	AX1-00 d	28 9	56 7	84 d	02 7
17 1	45 3	73 d	01 d	29 d	57 5	85 9	03 Qd
18 d	46 d	74 d	02 d	30 d	58 Qd	86 d	04 d
19 d	47 d	75 7	03 d	31 5	59 d	87 7	05 7
20 9	48 d	76 Qd	04 d	32 9	60 d	88 Qd	06 Qd
21 d	49 5	77 d	05 d	33 d	61 5	89 d	07 d
22 d	50 d	78 d	06 d	34 d	62 d	90 d	08 9
23 5	51 7	79 d	07 d	35 1	63 d	91 d	09 9
24 d	52 Qd	80 3	08 d	36 d	64 d	92 9	10 9
25 5	53 d	81 d	09 5	37 9	65 d	93 d	11 d
26 9	54 d	82 d	10 d	38 d	66 d	94 d	12 9
27 7	55 9	83 d	11 3	39 d	67 d	95 1	13 7
28 Qd	56 d	84 d	12 d	40 3	68 d	96 7	14 Qd

DISPOSITION OF COUPONS

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CODE: 1 = To be removed during Estimation Point 1, and assayed.
d = Dummy coupon, to be removed but not assayed.
Qd = To be removed after the quarantine period, and assayed. To be a dummy coupon if there is no quarantine period.

A02-15 d	A02-43 d	A02-71 d	A02-99 1	A03-19 d	A04-17 4	A05-13 d	A06-11 d
16 3	44 d	72 5	AX2-00 d	20 d	18 d	14 d	12 d
17 d	45 d	73 7	01 d	21 d	19 6	15 d	13 d
18 d	46 d	74 3	02 d	22 d	20 d	16 Qd	14 d
19 d	47 d	75 Qd	03 d	23 d	21 d	17 7	15 5
20 7	48 d	76 5	04 3	24 d	22 d	18 7	16 d
21 Qd	49 d	77 3	05 d	25 5	23 6	19 Qd	17 d
22 d	50 d	78 d	06 5	26 d	24 d	20 d	18 d
23 7	51 d	79 d	07 1	27 4	25 5	21 d	19 d
24 Qd	52 d	80 9	08 d	28 d	26 d	22 d	20 d
25 d	53 3	81 d	A03-01 d	29 Qd	27 d	23 d	21 Qd
26 5	54 9	82 d	02 3	30 7	28 5	24 d	22 6
27 7	55 5	83 d	03 7	A04- 01 d	29 1	25 d	23 7
28 3	56 d	84 d	04 6	02 d	30 d	26 4	24 3
29 Qd	57 d	85 d	05 Qd	03 d	31 d	27 d	25 5
30 d	58 9	86 d	06 d	04 3	32 d	28 3	26 4
31 d	59 9	87 d	07 d	05 d	A05-01 d	29 d	27 6
32 d	60 d	88 d	08 d	06 d	02 d	30 d	28 d
33 d	61 5	89 5	09 d	07 7	03 d	A06-01 d	29 4
34 d	62 d	90 7	10 d	08 Qd	04 6	02 d	30 d
35 1	63 7	91 Qd	11 4	09 d	05 4	03 d	A07-01 d
36 d	64 Qd	92 3	12 5	10 d	06 d	04 d	02 d
37 d	65 d	93 d	13 d	11 4	07 5	05 d	03 1
38 d	66 d	94 d	14 d	12 d	08 d	06 d	A09-01 3
39 d	67 5	95 d	15 4	13 d	09 d	07 d	02 d
40 d	68 d	96 9	16 d	14 d	10 d	08 d	03 d
41 9	69 d	97 5	17 1	15 Qd	11 5	09 5	A10-01 7
42 3	70 d	98 d	18 d	16 7	12 d	10 d	02 Qd

CMTM STERILIZATION PROGRAM

DISPOSITION OF COUPONS

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CODE: 1 = To be removed during Estimation Point 1, and assayed.
d = Dummy coupon, to be removed but not assayed.
Qd = To be removed, after the quarantine period and assayed. To be a dummy coupon if there is no quarantine period.

A10-03 5	A10-31 d	A10-59 5	A10-87 d	A11-25 d	A11-53 Qd	A11-81 d	A13-09 d
04 d	32 d	60 d	88 3	26 d	54 d	82 5	10 d
05 d	33 d	61 d	89 d	27 d	55 d	83 d	11 d
06 d	34 d	62 5	90 d	28 d	56 d	84 d	12 d
07 d	35 5	63 d	A11-01 Qd	29 d	57 7	85 d	A16-01 d
08 5	36 d	64 d	02 7	30 d	58 Qd	86 7	02 d
09 d	37 d	65 7	03 3	31 3	59 d	87 Qd	03 5
10 d	38 d	66 Qd	04 d	32 d	60 d	88 5	04 d
11 d	39 d	67 d	05 d	33 d	61 1	89 5	05 d
12 d	40 d	68 d	06 5	34 d	62 d	90 5	06 d
13 d	41 5	69 7	07 5	35 d	63 7	A12-01 d	07 d
14 d	42 7	70 Qd	08 5	36 3	64 Qd	02 3	08 d
15 1	43 Qd	71 7	09 d	37 5	65 d	03 d	09 7
16 d	44 5	72 Qd	10 3	38 d	66 d	04 5	10 Qd
17 d	45 1	73 d	11 d	39 d	67 d	05 7	B01-01 d
18 d	46 d	74 7	12 d	40 d	68 d	06 Qd	02 d
19 d	47 d	75 Qd	13 1	41 d	69 Qd	07 Qd	03 3
20 Qd	48 d	76 d	14 d	42 d	70 7	08 7	04 d
21 7	49 d	77 d	15 Qd	43 1	71 5	09 d	05 Qd
22 7	50 d	78 Qd	16 7	44 d	72 d	10 d	06 7
23 Qd	51 3	79 7	17 5	45 d	73 d	A13-01 1	07 4
24 d	52 3	80 7	18 7	46 d	74 d	02 7	08 d
25 d	53 d	81 Qd	19 Qd	47 d	75 d	03 5	09 6
26 5	54 d	82 d	20 d	48 5	76 7	04 Qd	10 3
27 d	55 1	83 d	21 d	49 7	77 Qd	05 d	11 d
28 d	56 3	84 3	22 3	50 Qd	78 d	06 3	12 5
29 d	57 1	85 d	23 d	51 d	79 7	07 d	13 d
30 d	58 d	86 d	24 d	52 7	80 Qd	08 d	14 d

DISPOSITION OF COUPONS

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CODE

1 = To be removed during Estimation Point 1, and assayed.
d = Dummy coupon, to be removed but not assayed
Qd = To be removed after the quarantine period, and assayed. To be a dummy coupon if there is no quarantine period.

01-15	d	C02-13	d	C04-17	d	C05-15	d	D01-13	5	D01-41	d	D01-69	d	D02-13	5
16	d	14	d	18	9	16	d	14	d	42	7	70	d	14	7
17	d	15	d	19	d	17	d	15	6	43	Qd	71	1	15	7
18	4	16	d	20	d	18	9	16	5	44	d	72	d	16	5
19	6	17	d	21	d	19	d	17	d	45	2	73	d	17	Qd
20	5	18	9	22	9	20	d	18	d	46	6	74	d	18	5
B02-01	d	19	9	23	d	21	9	19	d	47	d	75	2	19	5
02	3	20	d	24	d	22	d	20	3	48	d	76	d	20	Qd
03	3	21	d	25	9	23	d	21	d	49	d	77	2	21	Qd
04	3	22	d	26	d	24	9	22	d	50	2	78	d	22	7
B03-01	6	23	9	27	9	25	d	23	3	51	d	79	d	23	Qd
02	4	24	9	28	d	26	d	24	d	52	d	80	d	24	5
C01-01	8	C04-01	d	29	9	27	d	25	d	53	d	81	d	25	7
02	7	02	d	30	9	28	9	26	6	54	d	82	1	26	Qd
03	5	03	9	C05-01	9	29	d	27	d	55	d	83	d	27	5
04	8	04	d	02	d	30	d	28	d	56	d	84	d	28	3
C02-01	d	05	d	03	d	D01-01	Qd	29	d	57	d	D02-01	Qd	29	7
02	9	06	9	04	9	02	7	30	7	58	d	02	7	30	5
03	9	07	9	05	d	03	7	31	Qd	59	6	03	Qd	31	7
04	9	08	d	06	9	04	Qd	32	3	60	Qd	04	3	32	5
05	d	09	d	07	d	05	d	33	d	61	7	05	3	33	d
06	9	10	9	08	d	06	d	34	d	62	7	06	7	34	5
07	d	11	d	09	d	07	d	35	d	63	Qd	07	Qd	35	d
08	d	12	9	10	9	08	5	36	4	64	6	08	3	36	Qd
09	9	13	d	11	9	09	d	37	d	65	d	09	7	37	7
10	9	14	d	12	d	10	d	38	d	66	d	10	5	38	5
11	9	15	9	13	9	11	3	39	3	67	5	11	Qd	39	d
12	9	16	d	14	d	12	d	40	d	68	d	12	Qd	40	5

CMTM STERILIZATION PROGRAM

DISPOSITION OF COUPONS

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CODE: .1 = To be removed during Estimation Point 1, and assayed.
d = Dummy coupon, to be removed but not assayed.
Qd = To be removed, after the quarantine period, and assayed. To be a dummy coupon if there is no quarantine period.

D02-41	3	D02-69	3	D04-27	d	D04-55	d	D07-01	1	I02-03	d	I03-01	d	I03-29	1
42	7	70	3	28	d	56	d	02	5	04	3	02	3	30	d
43	3	D04-01	d	29	d	57	d	03	7	05	d	03	d	M01-01	1
44	d	02	d	30	d	58	d	04	3	06	d	04	d	02	d
45	Qd	03	d	31	d	59	1	05	7	07	3	05	d	03	d
46	3	04	d	32	d	60	d	06	5	08	d	06	d	M02-01	1
47	Qd	05	d	33	1	61	d	07	5	09	d	07	3	02	d
48	d	06	d	34	d	62	d	08	3	10	3	08	d	03	d
49	3	07	d	35	d	63	d	09	3	11	d	09	d	04	7
50	7	08	d	36	d	64	1	10	3	12	d	10	d	05	Qd
51	Qd	09	d	37	d	65	d	D09-01	d	13	3	11	d	06	d
52	3	10	d	38	d	66	d	02	1	14	3	12	d	M03-01	d
53	1	11	d	39	d	67	d	03	d	15	d	13	d	02	Qd
54	7	12	d	40	d	68	d	04	d	16	d	14	d	03	7
55	1	13	d	41	1	69	d	05	d	17	d	15	d	M04-01	7
56	d	14	d	42	d	70	d	06	d	18	d	16	d	02	Qd
57	3	15	d	43	d	D06-01	5	07	1	19	1	17	d	03	7
58	Qd	16	d	44	d	02	d	08	d	20	d	18	d	04	Qd
59	d	17	d	45	d	03	2	09	d	21	d	19	d	05	7
60	7	18	d	46	d	04	d	10	d	22	d	20	d	06	d
61	3	19	d	47	d	05	6	I01-01	d	23	d	21	d	07	7
62	7	20	d	48	d	06	d	02	d	24	d	22	d	08	Qd
63	3	21	1	49	d	07	5	03	1	25	3	23	3	09	7
64	1	22	d	50	d	08	6	04	d	26	d	24	d	10	Qd
65	3	23	d	51	d	09	7	05	3	27	3	25	d	M05-01	7
66	3	24	d	52	d	10	3	06	d	28	d	26	d	02	Qd
67	3	25	d	53	1	11	4	I02-01	d	29	d	27	d		
68	5	26	d	54	d	12	Qd	02	d	30	d	28	d		

DISPOSITION OF COUPONS

CODE: 3.1 = To be removed during Estimation Point 1, and assayed.

d = Dummy coupon, to be removed but not assayed.

Qd = To be removed, after the quarantine period and assayed. To be a dummy coupon if there is no quarantine period.

P02-01 d	P03-09 d	R03-12 d	S02-17 d	S02-45 d	S04-07 d	S06-05 2	S08-19 d
02 d	10 d	13 d	18 d	46 Qd	08 3	06 d	20 d
03 5	11 5	14 Qd	19 d	47 5	09 3	S07-01 d	21 d
04 d	12 d	15 7	20 3	48 7	10 3	02 3	22 d
05 d	13 1	S01-01 1	21 d	49 3	11 1	03 4	23 1
06 d	14 5	02 d	22 d	50 Qd	12 d	04 d	24 d
07 d	15 5	03 d	23 d	51 7	13 Qd	05 5	25 d
08 5	16 d	04 d	24 d	52 d	14 7	06 d	26 d
09 d	R01-01 d	05 1	25 d	53 d	S05-01 d	07 2	27 d
10 5	02 7	06 d	26 d	54 3	02 d	08 d	28 d
11 5	03 Qd	07 d	27 d	55 1	03 d	S08-01 1	29 1
12 5	R02-01 7	08 1	28 d	56 3	04 3	02 d	30 d
13 d	02 7	S02-01 d	29 d	57 d	05 3	03 d	31 d
14 d	03 Qd	02 d	30 7	58 d	06 5	04 d	32 d
15 5	04 Qd	03 d	31 Qd	59 d	07 d	05 1	33 1
16 d	05 Qd	04 d	32 5	60 3	08 3	06 d	34 d
17 d	06 7	05 d	33 1	61 d	09 5	07 d	35 d
18 5	R03-01 d	06 d	34 d	62 Qd	10 d	08 d	36 d
P03-01 d	02 Qd	07 d	35 d	63 7	11 d	09 d	37 d
02 5	03 1	08 d	36 d	64 5	12 d	10 1	38 d
03 d	04 7	09 d	37 5	S03-01 5	13 7	11 d	39 1
04 d	05 7	10 5	38 3	02 3	14 Qd	12 d	40 d
05 5	06 Qd	11 d	39 7	S04-01 5	15 d	13 d	41 d
06 5	07 d	12 3	40 Qd	02 d	16 d	14 d	42 d
07 d	08 7	13 d	41 d	03 5	S06-01 4	15 d	43 d
08 5	09 Qd	14 d	42 d	04 5	02 d	16 d	44 d
	10 d	15 7	43 5	05 d	03 d	17 d	45 1
	11 d	16 Qd	44 d	06 d	04 4	18 1	46 d

CMTM STERILIZATION PROGRAM

DISPOSITION OF COUPONS

Page 7 Of 7

CODE: .1 = To be removed during Estimation Point 1, and assayed.
d = Dummy coupon, to be removed but not assayed.
Qd = To be removed, after the quarantine period and assayed. To be a dummy coupon if there is no quarantine period.

S08-47 1	U01-15 d						
48 d	16 d						
S11-01 d	17 d						
02 d	18 3						
03 d	19 d						
04 3	20 d						
05 d	21 d						
06 3	U02-01 8						
S12-01 1	02 3						
02 d	03 d						
03 1	04 d						
04 d	05 d						
05 d	06 d						
06 1	U03-01 3						
U01-01 1	02 d						
02 d	03 d						
03 8	04 3						
04 8	05 1						
05 3	06 d						
06 d	07 d						
07 1	08 d						
08 1	09 3						
09 d							
10 d							
11 d							
12 3							
13 d							
14 8							

APPENDIX B

COUPON REMOVAL SCHEDULE

CMTM STERILIZATION PROGRAM

SADL ASSEMBLY OPERATION COUPON REMOVAL SCHEDULE

ESTIMATION POINT 1. DATE:_____, 19_____. TIME:_____.

(Section 1.0, Oper. 5)

To Be Removed For Assay:

A01-17	A10-45	D04-53	P03-13	S08-23
AX1-35	A10-55	D04-41	R03-03	S08-29
AX1-55	A10-57	D04-59	S01-01	S08-33
AX1-71	A11-13	D04-64	S01-05	S08-39
AX1-95	A11-43	D07-01	S01-08	S08-45
A02-35	A11-61	D09-02	S02-33	S08-47
A02-99	A13-01	D09-07	S02-55	S12-01
AX2-07	D02-53	I01-03	S04-11	S12-03
A03-17	D02-55	I02-19	S08-01	S12-06
A04-29	D04-17	I03-29	S08-05	U01-01
A07-03	D04-21	M01-01	S08-10	U01-07
A10-15	D04-33	M02-01	S08-18	U03-05

All Coupons Are To Be Removed From The Following Zones:

A07 (2)
D04 (63)
D09 (8)
M01 (2)
S01 (5)
S08 (38)
S12 (3)

ESTIMATION POINT 2.
(Section 1.0 Oper. 90) DATE:_____,19_____. TIME:_____.

To Be Removed For Assay:

D01-45
D01-50
D01-75
D01-77
D06-03
S06-05

CMTM STERILIZATION PROGRAM

SADL ASSEMBLY OPERATION COUPON REMOVAL SCHEDULE.

ESTIMATION POINT 3. Date: _____, 19____. TIME:_____
(Sec. 2.0, Oper. 50)

To Be Removed For Assay:

A01-10	A02-77	B02-02	D02-67	S02-49
A01-12	A02-92	B02-03	D02-69	S02-54
A01-31	AX2-04	B02-04	D02-70	S02-56
A01-45	A03-02	D01-11	D06-10	
A01-63	A04-04	D01-20	D07-04	S02-60
A01-80	A05-28	D01-23	D07-08	S03-02
A01-88	A06-24	D01-32	D07-09	S04-08
A01-95	A09-01	D01-39	D07-10	S04-09
AX1-11	A10-51	D02-04	I01-05	S04-10
AX1-18	A10-52	D02-05	I02-04	S05-04
AX1-24	A10-56	D02-08	I02-07	S05-05
AX1-40	A10-84	D02-28	I02-10	S05-08
AX1-49	A10-88	D02-41	I02-13	S07-02
AX1-53	A11-03	D02-43	I02-14	S11-04
AX1-73	A11-10	D02-46	I02-25	S11-06
AX1-99	A11-22	D02-49	I02-27	U01-05
AY1-08	A11-31	D02-52	I03-02	U01-12
A02-16	A11-36	D02-57	I03-07	U02-02
A02-28	A12-02	D02-61	I03-23	U03-01
A02-42	A13-06	D02-63	S02-12	U03-04
A02-53	B01-03	D02-65	S02-20	U03-09
A02-74	B01-10	D02-66	S02-38	

ALL COUPONS ARE TO BE REMOVED FROM THE FOLLOWING ZONES:

A09 (2)
B02 (1)
I01 (4)
I02 (22)
I03 (26)
S11 (4)
U03 (5)

ESTIMATION POINT 4 Date: _____, 19_____. TIME:_____
(Sec. 3.0, Oper. 90)

A03-11	A05-05	B01-07	D01-36	D06-11
A03-15	A05-26	B01-18	D01-71	S06-01
A03-27	A06-26	B03-02	D01-82	S06-04
A04-11	A06-29			S07-04
A04-17				

ALL COUPONS ARE TO BE REMOVED FROM ZONE S06 (3 COUPONS).

ESTIMATION POINT 5.
(Sec. 4.0, Oper. 80) Date:_____, 19_____. TIME:_____

To Be Removed For Assay:

A01-05	A02-76	A11-06	D02-10	P02-12
A01-07	A02-89	A11-07	D02-13	P02-15
A01-11	A02-97	A11-08	D02-16	P02-18
A01-23	AX2-06	A11-17	D02-18	P03-02
A01-25	A03-12	A11-37	D02-19	P03-05
A01-36	A03-25	A11-48	D02-24	P03-06
A01-43	A04-25	A11-71	D02-27	P03-08
A01-49	A04-28	A11-82	D02-30	P03-11
A01-93	A05-07	A11-88	D02-32	P03-14
A01-97	A05-11	A11-89	D02-34	P03-15
AX1-09	A06-09	A11-90	D02-38	S02-10
AX1-31	A06-15	A12-04	D02-40	S02-32
AX1-43	A06-25	A13-03	D02-68	S02-37
AX1-57	A10-03	A16-03	D06-01	S02-43
AX1-61	A10-08	B01-12	D06-07	S02-47
AX1-81	A10-26	B01-20	D07-02	S02-64
AY1-07	A10-35	C01-03	D0[illegible]	S03-01
A02-26	A10-41	D01-08	P02-03	S04-01
A02-55	A10-44	D01-13	P02-08	S04-03
A02-61	A10-59	D01-16	P02-10	S04-04
A02-67	A10-62	D01-67	P02-11	S05-06
A02-72				S05-09
				S07-05

ALL COUPONS ARE TO BE REMOVED FROM THE FOLLOWING ZONES:

P02 (11)
P03 (8)
S07 (4)

ESTIMATION POINT 6
(Sec. 5.0, Oper. 60) Date:_____, 19_____. TIME:_____

To Be Removed For Assay:

A03-04	A06-22	B03-01	D01-59
A04-19	A06-27	D01-15	D01-64
A04-23	B01-09	D01-26	D06-05
A05-04	B01-19	D01-46	D06-08

CMTM STERILIZATION PROGRAM July 1967

SADL ASSEMBLY OPERATION COUPON REMOVAL SCHEDULE

ESTIMATION POINT 7
(Sec. 6.0 Oper. 30) Date:_____, 19_____. TIME:_____

A01-02	A02-27	A11-16	D01-62	M03-03
A01-27	A02-63	A11-18	D02-02	M04-01
A01-29	A02-73	A11-49	D02-06	M04-03
A01-32	A02-90	A11-52	D02-09	M04-05
A01-51	A03-03	A11-57	D02-14	M04-07
A01-62	A03-30	A11-63	D02-15	M04-09
A01-75	A04-07	A11-70	D02-22	M05-01
A01-87	A04-16	A11-76	D02-25	R01-02
A01-98	A05-17	A11-79	D02-29	
AX1-25	A05-18	A11-86	D02-31	R02-01
Ax1-26	A06-23	A12-05	D02-37	R02-02
AX1-56	A10-01	A12-08	D02-42	R02-06
AX1-75	A10-21	A13-02	D02-50	R03-04
AX1-87	A10-22	A16-09	D02-54	R03-05
AX1-96	A10-42	B01-06	D02-60	R03-08
AY1-04	A10-65	D01-02	D02-62	R03-15
A02-02	A10-69	D01-03	D06-09	S02-15
A02-05	A10-71	D01-30	D07-03	S02-30
A02-13	A10-74	D01-42	D07-05	S02-39
A02-20	A10-79	D01-61	M02-04	S02-48
A02-23	A10-80			S02-51
	A11-02			S02-63
				S04-14
				S05-13

ALL COUPONS ARE TO BE REMOVED FROM THE FOLLOWING ZONES:

A03-	(20)	M02	(4)
A04	(22)	M03	(2)
A05	(22)	M04	(5)
A06	(21)	M05	(1)
A10	(63)	R01	(2)
A11	(60)	R02	(3)
A12	(6)	S02	(43)
A13	(8)	S04	(6)
A16	(8)	S05	(10)
B01	(11)	R03-	(10)
D01	(57)		
D02	(23)		
D06	(4)		

CMTM STERILIZATION PROGRAM July 1967

SADL ASSEMBLY OPERATION COUPON REMOVAL SCHEDULE

ESTIMATION POINT 8
(Sec. 8.0, Oper. 20) Date: _____, 19_____. TIME:_____

To Be Removed For Assay:

C01-01	U01-03	U01-14
C01-04	U01-04	U01-18
		U02-01

ALL COUPONS ARE TO BE REMOVED FROM THE FOLLOWING ZONES:

U01	(13)
U02	(4)
C01	(1)

ESTIMATION POINT 9.
(Sec. 9.0, Oper. 10) Date: _____, 19_____. TIME:_____

To Be Removed For Assay:

A01-09	AX1-28	A02-58	C02-24	C05-06
A01-20	AX1-32	A02-59	C04-06	C05-10
A01-26	AX1-37	A02-80	C04-07	C05-11
A01-35	AX1-69	A02-96	C04-10	C05-13
A01-41	AX1-78	C02-02	C04-12	C05-18
A01-55	AX1-85	C02-03	C04-03	C05-21
A01-57	AX1-92	C02-04	C04-15	C05-24
A01-58	AY1-01	C02-06	C04-18	C05-28
A01-59	AY1-05	C02-09	C04-22	
A01-61	A02-08	C02-10	C04-25	
A01-72	A02-09	C02-11	C04-27	
A01-90	A02-10	C02-12	C04-29	
AX1-14	A02-12	C02-18	C04-30	
AX1-19	A02-41	C02-19	C05-01	
AX1-20	A02-54	C02-23	C05-04	

ALL COUPONS ARE TO BE REMOVED FROM THE FOLLOWING ZONES:

A01,	AX1, AY1	(131)
A02,	AX2	(69)
	C02	(12)
	C04	(18)
	C05	(20)

APPENDIX C

POST QUARANTINE COUPON REMOVAL SCHEDULE

POST QUARANTINE COUPON REMOVAL SCHEDULE

Date:_____, 19_____. TIME:_____

AFTER THE QUARANTINE PERIOD, THE FOLLOWING COUPONS ARE TO BE REMOVED FOR ASSAY:

A01-03	A02-29	A11-01	D01-63	M04-02
A01-28	A02-64	A11-15	D02-01	M04-04
A01-30	A02-75	A11-19	D02-03	M04-06
A01-33	A02-91	A11-50	D02-07	M04-08
A01-52	A03-05	A11-53	D02-11	M04-10
A01-60	A03-29	A11-58	D02-12	M05-02
A01-76	A04-08	A11-64	D02-17	R01-03
A01-86	A04-15	A11-69	D02-20	R02-03
A01-99	A05-16	A11-77	D02-21	R02-04
AX1-23	A05-19	A11-80	D02-23	R02-05
AX1-27	A06-21	A11-87	D02-26	R03-02
AX1-58	A10-02	A12-06	D02-36	R03-06
AX1-76	A10-20	A12-07	D02-45	R03-09
AX1-88	A10-23	A13-04	D02-47	R03-14
AX1-97	A10-43	A16-10	D02-51	S02-16
AY1-03	A10-66	B01-05	D02-56	S02-31
A02-03	A10-70	D01-01	D02-58	S02-40
A02-06	A10-72	D01-04	D02-64	S02-46
A02-14	A10-75	D01-31	D05-12	S02-50
A02-21	A10-78	D01-43	M02-05	S02-62
A02-24	A10-81	D01-60	M03-02	S04-13
				S05-14

APPENDIX D

DESCRIPTIONS OF SURFACE AREAS, ZONES, AND COUPON QUANTITIES.

CMTM STERILIZATION PROGRAM

DEFINITION OF ZONES AND COUPON QUANTITIES

CLASSIFICATION OF ZONES:

A-1. Heavy burden, initially handled area.

A-2. Heavy burden, area handled in previous assembly stage.

A-3. Heavy burden, area handled two assembly stages earlier.

A-M. Heavy burden, area handled M-1 assembly stages earlier.

B. Moderate burden, direct fallout, horizontal upward flat surface, ridges, flanges.

C. Light burden, indirect fallout, vertical or slanted surfaces.

D. Very light burden, downward or inside surfaces.

M. Mates Surfaces.

O. Occluded Surfaces.

I. Inaccessible surfaces, not occluded or mated.

NOTE:

1. The numbers of dummy coupons, which are to be removed but not assayed, appear in parentheses.

2. An asterisk (*) indicates where a zone is handled just prior to the corresponding estimation point.

3. Surface area values which were estimated without measurements are denoted by the letter E.

4. Definitions of estimation points appear in Section II B of the text.

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Aeroshell	A01	25,345	Outside surface including the apex and conic section (Frustum)	5 D	0 C	17 C	0 C	17 C	0 C	16 C	0 C	24 (131) C	210
Aeroshell	A02	12,700	Outside surface cylindrical section. Subject to less fallout than zone 1, but there is a higher probability of human contamination, e.g., from coughing, sneezing, and accidental handling	3 D	0 C	8 C	0 C	9 C	0 C	9 C	0 C	10 (69) C	108
Aeroshell	A03	406.	Internal support ring cylinder, outside surface, y ± 45° sector.	1 D	0 D	1 D	3 * A-1	2 A-2	1 A-3	2 (20) A-4	0 0	0 0	30
Aeroshell	A04	406.	Internal support ring cylinder outside surface X ± 45° sector.	1 D	0 D	1 D	2 * A-1	2 A-2	2 A-3	2 (22) A-4	0 0	0 0	32
Aeroshell	A05	406.	Internal support cylinder outside surface, -y ± 45° sector.	0 D	0 D	1 D	2 * A-1	2 A-2	1 A-3	2 (22) A-4	0 0	0 0	30
Aeroshell	A06	406.	Internal support ring cylinder outside surface, - X ±45° sector.	0 D	0 D	1 D	2 * A-1	3 A-2	2 A-3	1 (21) A-4	0 0	0 0	30

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

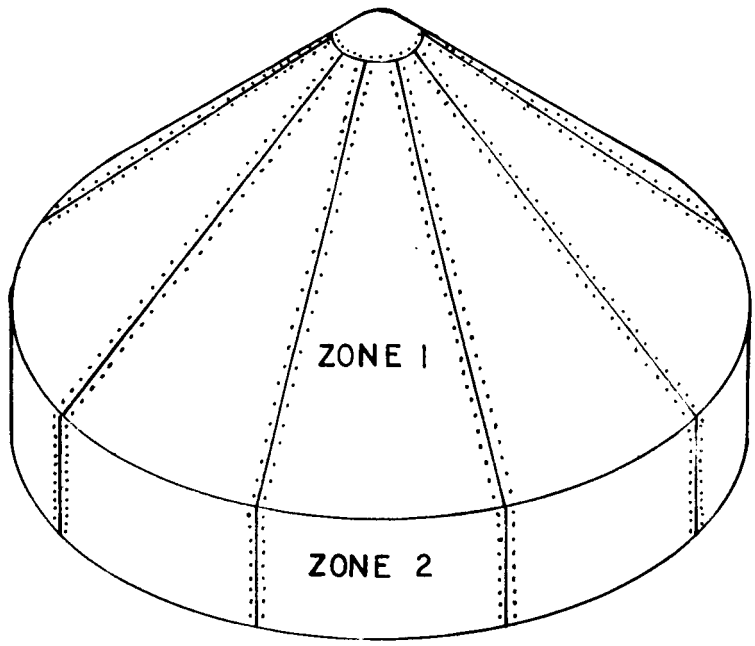
Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Aeroshell	A07	4084	Internal support ring cylinder inside surface (360°) and inside of flange, plus portion of inner surface of shell bounded by the cylinder	1 (2) D	0 D	0 D	0 0	0 0	0 0	0 0	0 0	0 0	3
Aeroshell	A08	373	Internal support ring flange top and edge, plus connectors and brackets.	0 D	0 D	0 D	0 * 0	0 0	0 0	0 0	0 0	0 0	0
Aeroshell	A09	287	Internal support ring flange bottom.	0 D	0 D	1 (2) D	0 M	0 M	0 M	0 M	0 M	0 M	3
Aeroshell	A10	20,000	Inside surface of shell, excluding portion bounded by internal support ring cylinder at the apex of the shell.	4 D	0 D	5 D	0 D	8 D	0 D	10 (63) D	0 0	0 0	90
Aeroshell	A11	16,960	Inside surface of shell, cylindrical section, plus bottom of aeroshell.	3 D	0 D	5 D	0 C	11 C	0 C	11 (60) C	0 0	0 0	90
Aeroshell	A12	1378	Both shells around attitude control tanks including the support brackets and electrical connectors.	0 D	0 D	1 D	0 D	1 D	0 D	2 (6) D	0 0	0 0	10

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Aeroshell	A13	1464	Two spherical attitude control tanks.	1 D	0 D	1 D	0 D	1 D	0 D	1 (8) D	0 0	0 0	12
Aeroshell	A14	3000^E	Mated and fayed surface areas (total) (X 2)	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0
Aeroshell	A15	1625^E (a) X (b) = 1625 inches^2	(a) Total number of rivets = 3620. (b) Total mated surface contact area per rivet (X2) = 0.45 (average).	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0
Aeroshell	A16	190^E	Cabling and Piping.	0 D	0 D	0 D	0 C	1 C	0 C	1 (8) C	0 0	0 0	10

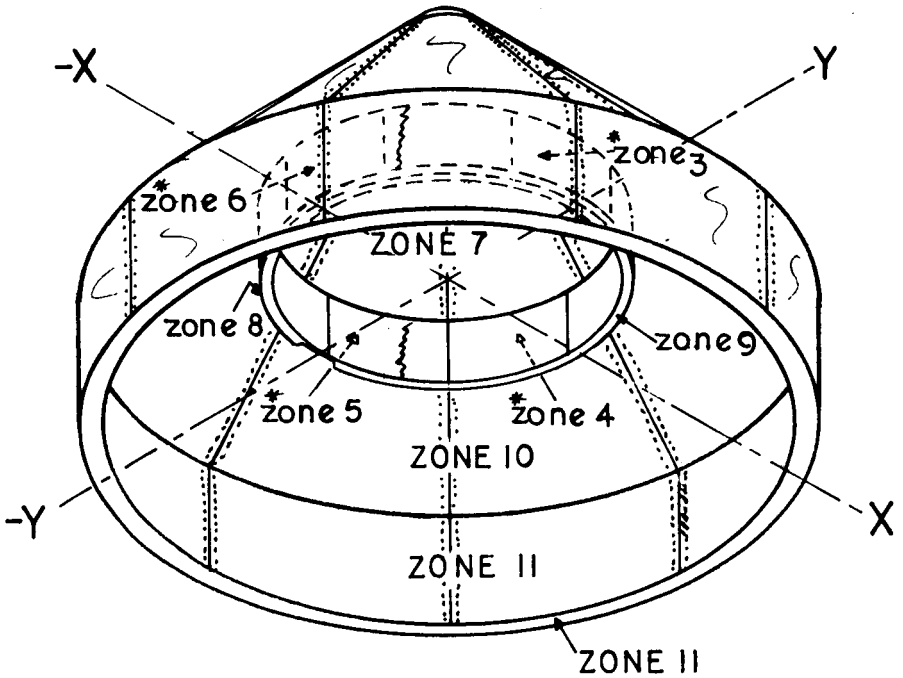
AEROSHELL



OUTSIDE SURFACE

FIGURE 2 ZONE DEFINITION - AEROSHELL OUTSIDE SURFACE

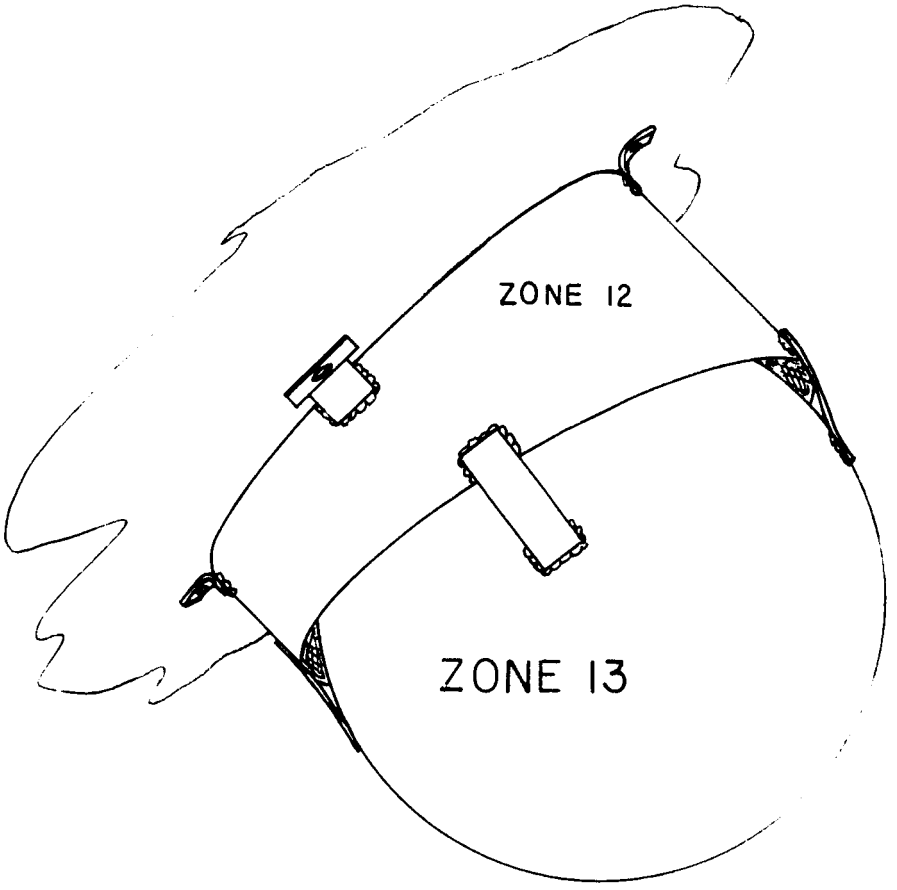
AEROSHELL (INSIDE VIEW)



*ZONES 3,4,5 & 6 outside surface of inner ring as pictured

FIGURE 3 ZONE DEFINITION - AEROSHELL INNER SURFACE

AEROSHELL (ATTITUDE CONTROL SYSTEM)



2 BOTTLES AT X_{ℓ}'-X AXIS AS PICTURED

FIGURE 4 ZONE DEFINITION - AEROSHELL - ATTITUDE CONTROL SYSTEM

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area ($In.^2$)	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Clamp	B01	810.	Outside and edges of clamp.	0 D	0 D	2 D	2 * A-1	2 A-2	2 A-3	1 (11) A-4	0 0	0 0	20
Clamp	B02	462.	Inside and Backface.	0 D	0 D	3 (1) D	0 * 0	0 0	0 0	0 0	0 0	0 0	4
Clamp	B03	E 68.	Support clips turnbuckle, nut & swivel bolts.	0 D	0 D	0 D	1 * A-1	0 A-2	1 A-3	0 A-4	0 0	0 0	2
Clamp	B04	E 540.	Occluded areas behind support band.	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Sterilization Canister	C01	E 150.	Interior of umbilical port	0 D	0 D	0 D	0 D	1 D	0 D	0 D	2 (1) * A-1	0 0	4
Sterilization Canister	C02	E 40,000	Interior of top of canister.	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 D	12 (12) D	24
Sterilization Canister	C03	E 30,000.	Interior of bottom of canister. (This is exposed to atmosphere for a very short time only).	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0
Sterilization Canister	C04	2800	Mating flange of top of canister.	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 D	12 (18) D	30
Sterilization Canister	C05	2800.	Mating flange of bottom of canister (although this faces upward horizontally, it is exposed to the atmosphere for a very short time only).	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 C	10 (20) C/O	30

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Dummy Chassis & Data Encoder	D01	392.	Handled areas on panels of the 7 dummy chassis 2 x 7 x (7 x 4) = 392 Sq. inches	0 D	4 * A-1	5 A-2	3 A-3	4 A-4	5 A-5	6 (57) A-6	0 0	0 0	84
Dummy Chassis & Data Encoder	D02	2180	Unhandled portion of the front panels of the 7 dummy chassis and edges of exposed panels	2 D	0 C	17 C	0 C	13 C	0 C	15 (23) C	0 0	0 0	70
Dummy Chassis & Data Encoder	D03	320	Portions of the 7 dummy chassis which mate onto the payload assembly.	0 D	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0
Dummy Chassis & Data Encoder	D04	30,340 E	Internal surface areas of the 7 dummy chassis, including all wiring, electrical components, circuit boards, etc.	7 (63) D	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	70
Dummy Chassis & Data Encoder	D05	819 E	(a) Total no. of rivets=1820 (b) Average surface area =0.45. (c)(a)x(b) = 819.	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

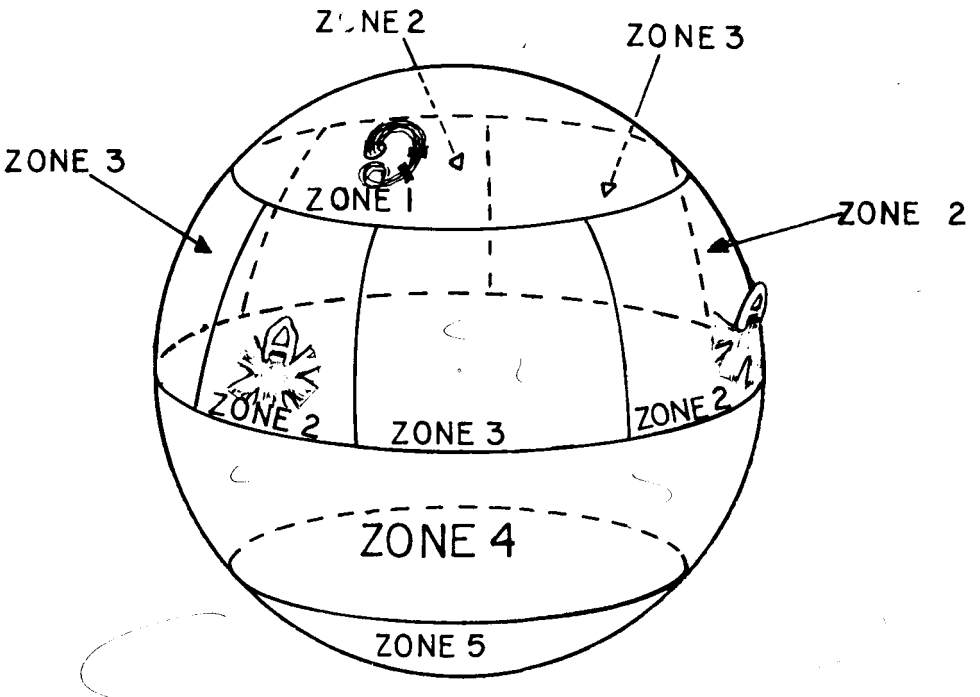
Part	Zone	Surface Area ($In.^2$)	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Dummy Chassis & Data Encoder	D06	56.	Handled areas on the front panel of the data encoder. 2x(7x4)=56 sq".	0 D	1 * A-1	1 A-2	1 A-3	2 A-4	2 A-5	1 (4) A-6	0 0	0 0	
Dummy Chassis & Data Encoder	D07	310.	Unhandled portion of the front panel of the data encoder.	1 D	0 C	4 C	0 C	3 C	0 C	2 C	0 0	0 0	10
Dummy Chassis & Data Encoder	D08	46.	Portion of the data encoder case which mates onto the payload assembly.	0 D	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0
Dummy Chassis & Data Encoder	D09	4791 E	Internal surface areas of the data encoder, including all wiring, electrical components, circuit boards etc.	2 (8) D	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	10
Dummy Chassis & Data Encoder	D10	117 E	(a) Total No. of rivets=260. (b) Average surface area= 0.45. (c) (a)x(b)= 117.	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Impact Limiter	I01	622.	Surface on top of Impact Limiter whose border is horizontal circle of radius=13.4"	1 D	0 B	1 (4) B	0 0	0 0	0 0	0 0	0 0	0 0	6
Impact Limiter	I02	1308.	Three surfaces containing lift hooks. These are bordered by the horizontal circles of radii, 13.4" & 22.5" and by arcs ± 30° of the centerline of hooks.	1 D	0 D	7 (22) * A-1	0 0	0 0	0 0	0 0	0 0	0 0	30
Impact Limiter	I03	1282.	Three surfaces on upper half of Impact Limiter bordered on top and bottom by circles of radii 13.4" & 22.5", respectively, and not included in zone I02.	1 D	0 C	3 (26) C	0 0	0 0	0 0	0 0	0 0	0 0	30
Impact Limiter	I04	2565.	Surface of Impact Limiter on bottom half of sphere whose borders are horizontal circles of radii 22.5" & 13.4". This surface is occluded by chassis.	0 D	0 D	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0
Impact Limiter	I05	622.	Surface on bottom of Impact Limiter whose border is a horizontal circle of radius 13.4".	0 D	0 D	0 I	0 I	0 0	0 0	0 0	0 0	0 0	0

IMPACT LIMITER



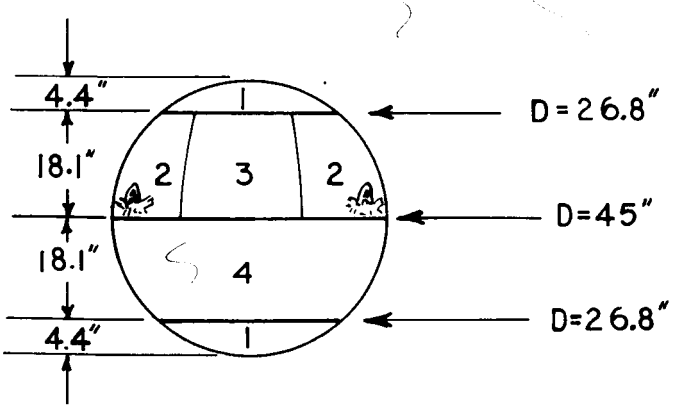


FIGURE 5 ZONE DEFINITION - IMPACT LIMITER

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Deorbit Motor	M01	306.	Top of motor above clamp location, (This becomes occluded immediately after assembly). Plus mated surface.	1 (2) D	0 C	0 C	0 C	0 C	0 0	0 0	0 0	0 0	3
Deorbit Motor	M02	1253.	Side surface of motor beneath clamp location.	1 D	0 D	0 D	0 D	0 D	0 D	1 (4) D	0 0	0 0	6
Deorbit Motor	M03	1574.	Bottom of motor and internal shell area and inside tank.	0 D	0 D	0 D	0 D	0 D	0 D	1 (2) D	0 0	0 0	3
Deorbit Motor	M04	E. 500.	Cabling. (Not including the connectors).	0 D	0 D	0 D	0 D	0 D	0 B	5 (5) B	0 0	0 0	10
Deorbit Motor	M05	E 25.	Cabling Connectors.	0 D	0 D	0 D	0 D	0 D	0 B	1 (1) B	0 * 0	0 0	2

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Motor Clamp Assembly	001	56.0	Outside and edges.	0 D	0 D	0 D	0 D	0 D	0 * I	0 I	0 0	0 0	0
Motor Clamp Assembly	002	54.0	Inside (occluded).	0 D	0 D	0 D	0 D	0 D	0 0	0 0	0 0	0 0	0
Motor Clamp Assembly	003	2.0 E	Screws, etc.	0 I	0 I	0 I	0 I	0 I	0 * 0	0 0	0 0	0 0	0

DE-ORBIT MOTOR

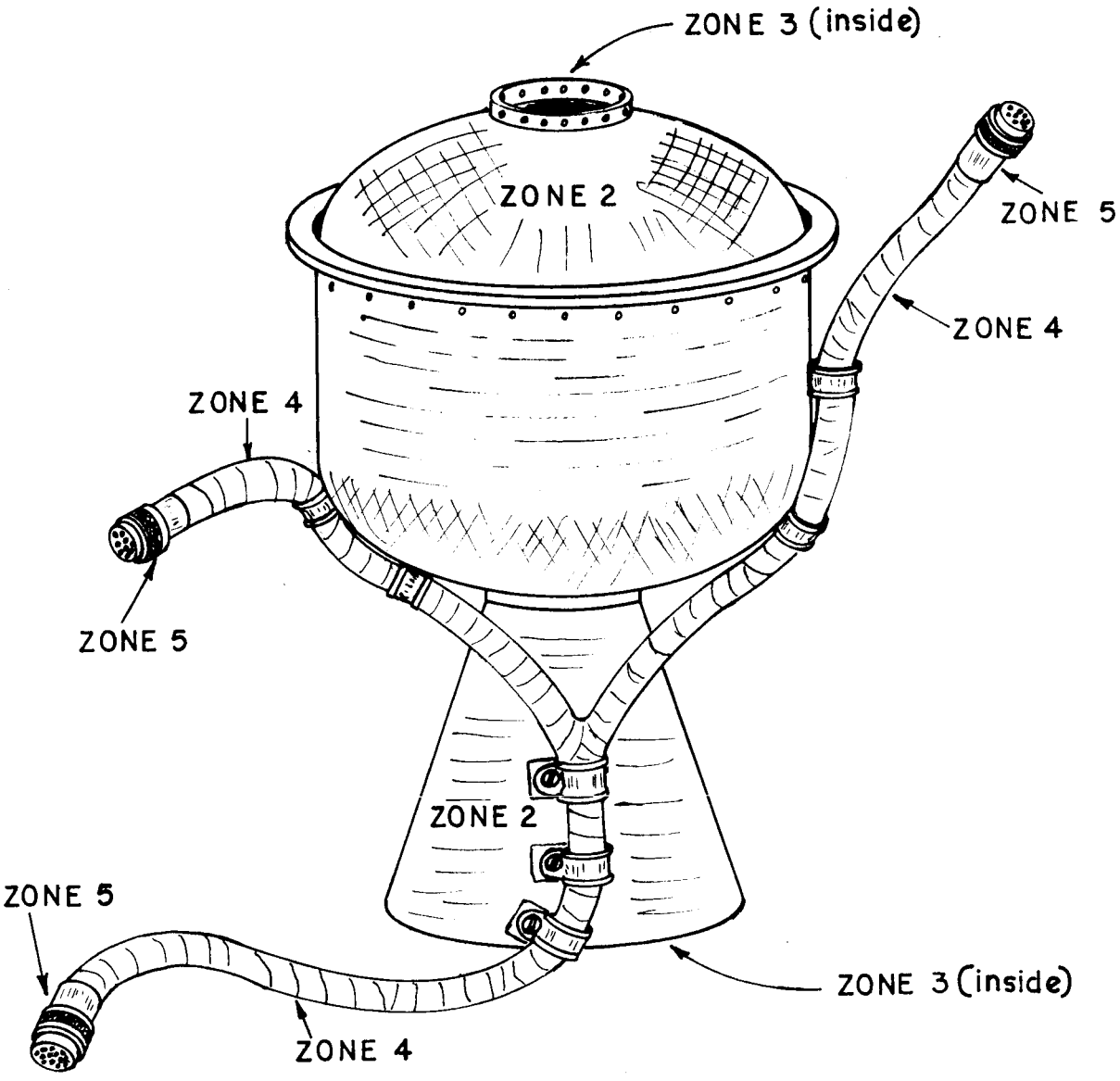


FIGURE 6 ZONE DEFINITION - DE-ORBIT MORTOR

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area ($In.^2$)	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Parachute Canister	P01	176.	Top surface.	0 D	0 B	0 B	0 B	0 I	0 I	0 I	0 0	0 0	0
Parachute Canister	P02	240.	Bottom Surface	0 D	0 D	0 D	0 D	7 (11) A-1 *	0 0	0 0	0 0	0 0	18
Parachute Canister	P03	760	Cylindrical Side surface (possibly a light contact area).	1 D	0 C	0 C	0 C	7 (8) B	0 I	0 I	0 0	0 0	16
Parachute Canister	P04	21.	Top flange.	0 D	0 B	0 B	0 B	0 I	0 I	0 I	0 0	0 0	0
Parachute Canister	P05	89.	Bottom flange	0 D	0 D	0 D	0 D	0 * M	0 M	0 M	0 M	0 M	0

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area ($In.^2$)	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Antenna Relay	R01	19.[E]	Top Surface (Except portion mated to payload)	0 D	0 B	0 B	0 B	0 B	0 B	1 (2) B	0 0	0 0	3
Antenna Relay	R02	254.	Bottom Surface	0 D	0 D	0 D	0 D	0 D	0 D	3 (3)* A-1	0 0	0 0	6
Antenna Relay	R03	550	Cylindrical side wall surface.	1 D	0 D	0 D	0 D	0 D	0 D	4 (10) A-1*	0 0	0 0	15
Antenna Relay	R04	264.[E]	Top surface mated to the payload assembly.	0 D	0 D	0 D	0 D	0 D	0 D	0 M*	0 M	0 M	0

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Payload Assembly	S01	366.	Portion of the columns which become mated when the chassis and the data encoder are mated.	3 (5) D	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	8
Payload Assy.	S02	7022.	All the type C areas which remain exposed after the completion of the CMTM assembly. This includes the cylindrical side wall and bottom flange, the struts (inside and out), the side walls (both sides) in the mid-support section, the upper shelves (top sides) above the bays, the portions of the columns between bays which are not mated, and the exposed areas of all brackets.	2 D	0 C	7 C	0 C	6 C	0 C	6 (43) C	0 O	0 O	64
Payload Assy.	S03	264. E	The bottom area directly under the bays which becomes mated by the assembly of the antenna relay.	0 D	0 D	1 D	0 D	1 D	0 D	0 M	0 M	0 M	2

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Payload Assy.	S04	1236.[E]	The bottom area directly under the bays minus zone S03.	1 D	0 D	3 D	0 D	3 D	0 D	6 D	0 0	0 0	14
Payload Assy.	S05	1635.	The de-orbit motor mount surface area excluding those portions which are occluded by the parachute canister and the motor, i.e. the shelf and internal areas.	0 D	0 D	3 D	0 D	2 D	0 D	1 (10) D	0 0	0 0	16
Payload Assy.	S06	12.	ID of shelf which becomes occluded by the parachute canister. This surface is contacted during assembly of the data encoder to bay 8.	0 D	1 * A-1	0 A-2	2 (3) A-3	0 0	0 0	0 0	0 0	0 0	6
Payload Assy.	S07	128.	ID of motor mount which becomes occluded by the assembly of the motor. This is contacted during the assembly of the data encoder to bay 8.	0 D	1 * A-1	1 A-2	1 A-3	1 (4) A-4	0 0	0 0	0 0	0 0	8

CMEM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Payload Assy.	S08	5798.	The areas inside the bays which become occluded by the assembly of the dummy chassis & data encoder.	10 (38) D	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	48
Payload Assy.	S09	14.	Bottom surface of the motor mount, which becomes entirely mated by the assembly of the motor.	0 D	0 D	0 D	0 D	0 D	0 M	0 M	0 M	0 M	0
Payload Assy.	S10	7180.	All the internal portions which are inaccessible and become occluded by the mating of the parachute canister.	0 D	0 I	0 I	0 I	0 0	0 Q	0 Q	0 0	0 0	0
Payload Assy.	S11	922.	The top flange which mates to the aeroshell and becomes mated after the aeroshell assembly.	0 D	0 B	2 (4) B	0 M	0 M	0 M	0 M	0 M	0 M	
Payload Assy.	S12	2610	Portion which mates to the Impact Limiter, including the bowl surface and the rubber receivers.	3 (3) D	0 C	0 0	0 0	0 0	0 0	0 0	0 0	0 0	6

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Payload Assy	S13	1500^E.	All permanently mated surfaces.	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0
Payload Assy	S14	900^E	(a) Number of rivets=2000. (b) Average area=0.45. (a)x(b)=900^E.	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0 M	0

CMTM STERILIZATION PROGRAM

DEFINITIONS OF ZONES AND COUPON QUANTITIES
(See explanatory notes on Page 1 of this Appendix)

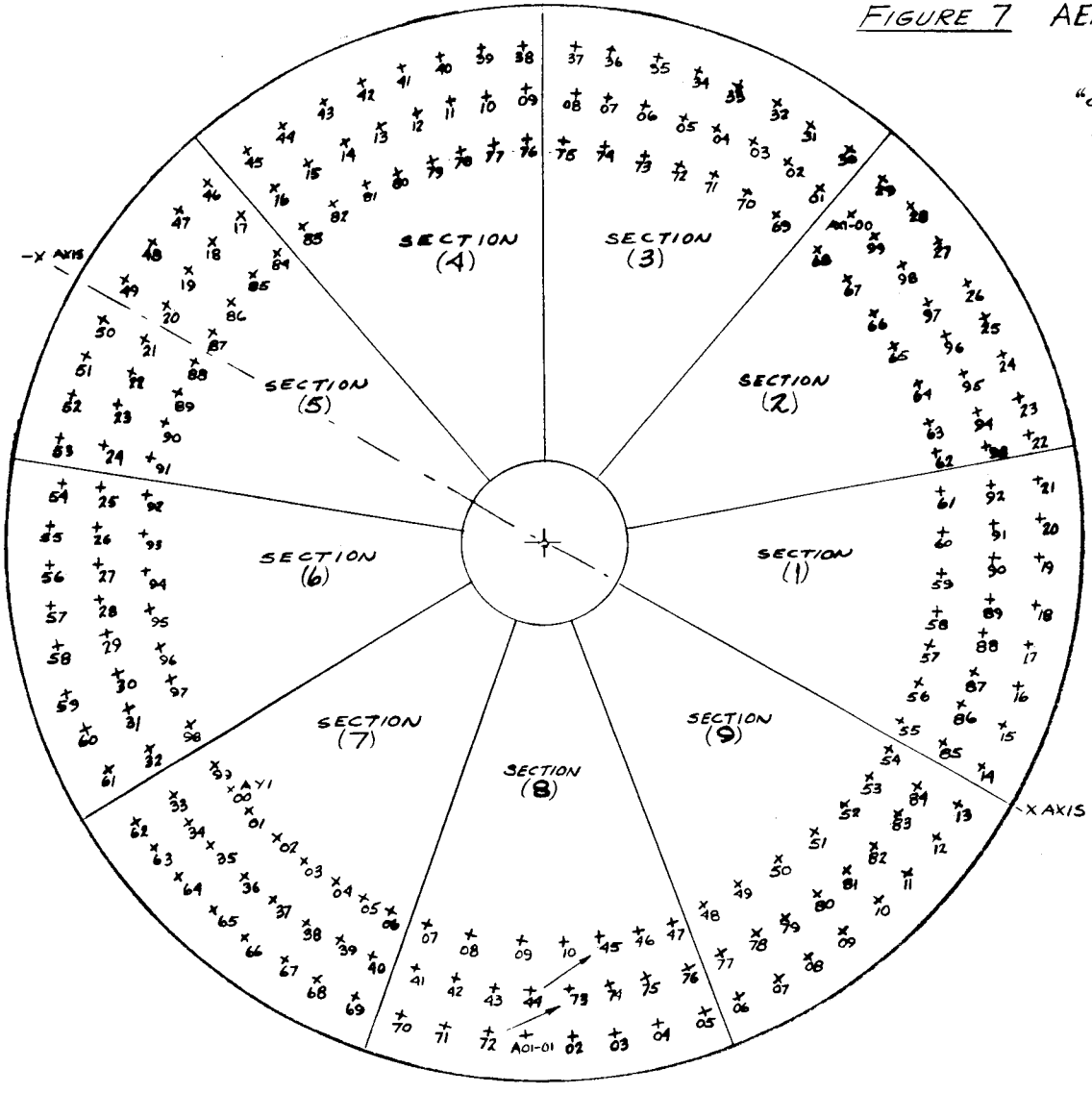
Part	Zone	Surface Area (In.^{2})	Description of Area	Quantity of coupons to be removed and zone classification at each estimation point.									Total Coupon Quantity
				1	2	3	4	5	6	7	8	9	
Umbilical	U01	255.	Connector plate.	2 D	0 D	2 D	0 D	0 D	0 D	0 D	4 (13) *A-1	0 0	21
Umbilical	U02	116^E	Cabling at the connector plate area (i.e. the 5 connectors).	0 D	0 B	1 B	0 B	0 B	0 B	0 B	1 (4) *A-1	0 0	6
Umbilical	U03	795^E.	Cabling.	1 D	0 B	3 (5) B	0 B	0 B	0 B	0 B	0 B	0 0	9
Umbilical	U04	20^E	Connector at Data Encoder.	0 D	0 *I	0 I	0 I	0 0	0 0	0 0	0 0	0 0	0
Total All Subassemblies	75	249,346.	CMTM and Canister. (Including only the inside of the Canister).	60	7	108	19	109	16	106	7	68	500
			Total dummy coupons:	121	0	64	3	23	0	411	18	250	890
			Total coupons:	181	7	172	22	132	16	517	25	318	1390

APPENDIX E

ILLUSTRATIONS OF COUPON LOCATIONS

FIGURE 7 AEROSHELL
(TOP VIEW)

"COUPON DISTRIBUTION"
NO.'S A01-01 TO A01-99
AX1-00 TO AX1-99
AY1-00 TO AY1-10



OUTSIDE SURFACE (FRUSTRUM WITH CONICAL APEX)

SHEET 1 OF 23

FIGURE 8

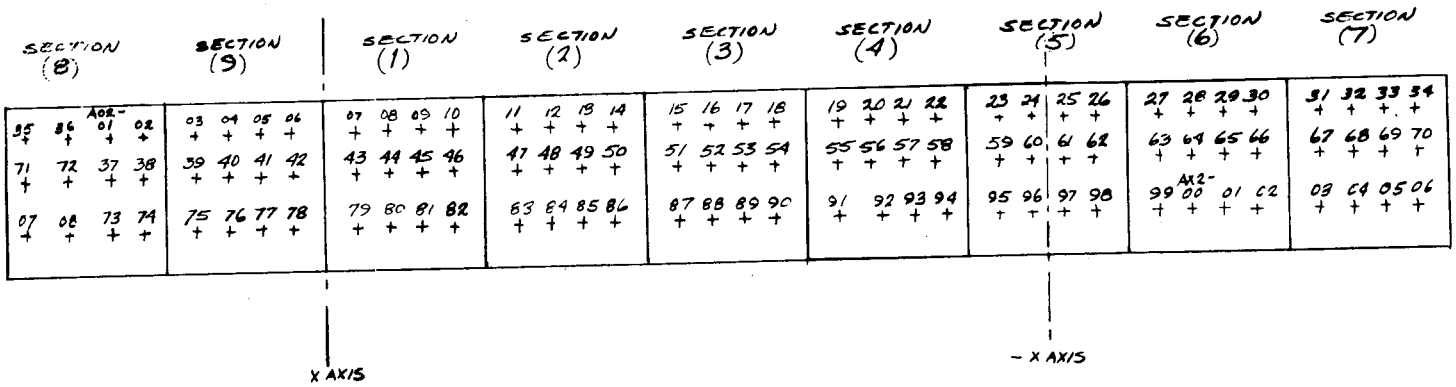
AEROSHELL

(SIDE VIEW)

"COUPON DISTRIBUTION"

No's A02-01 - A02-99
AX2-00 - AX2-08

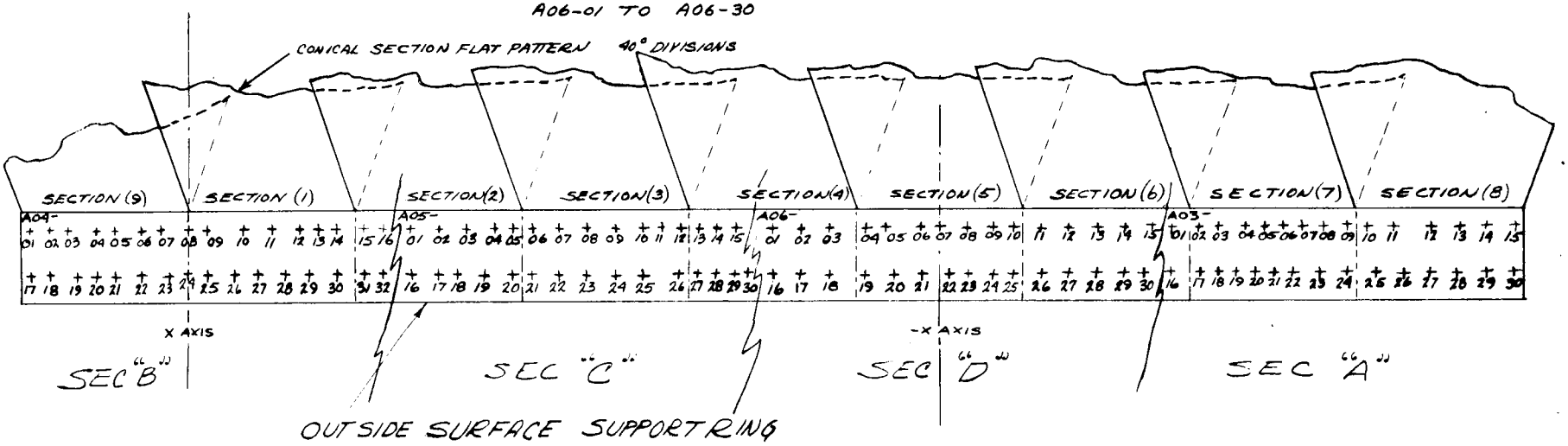
OUT SIDE CYLINDRICAL SURFACE



SHEET 2 OF 23

FIGURE 9 AEROSHELL
(SUPPORT RING, INSIDE)
SIDE VIEW

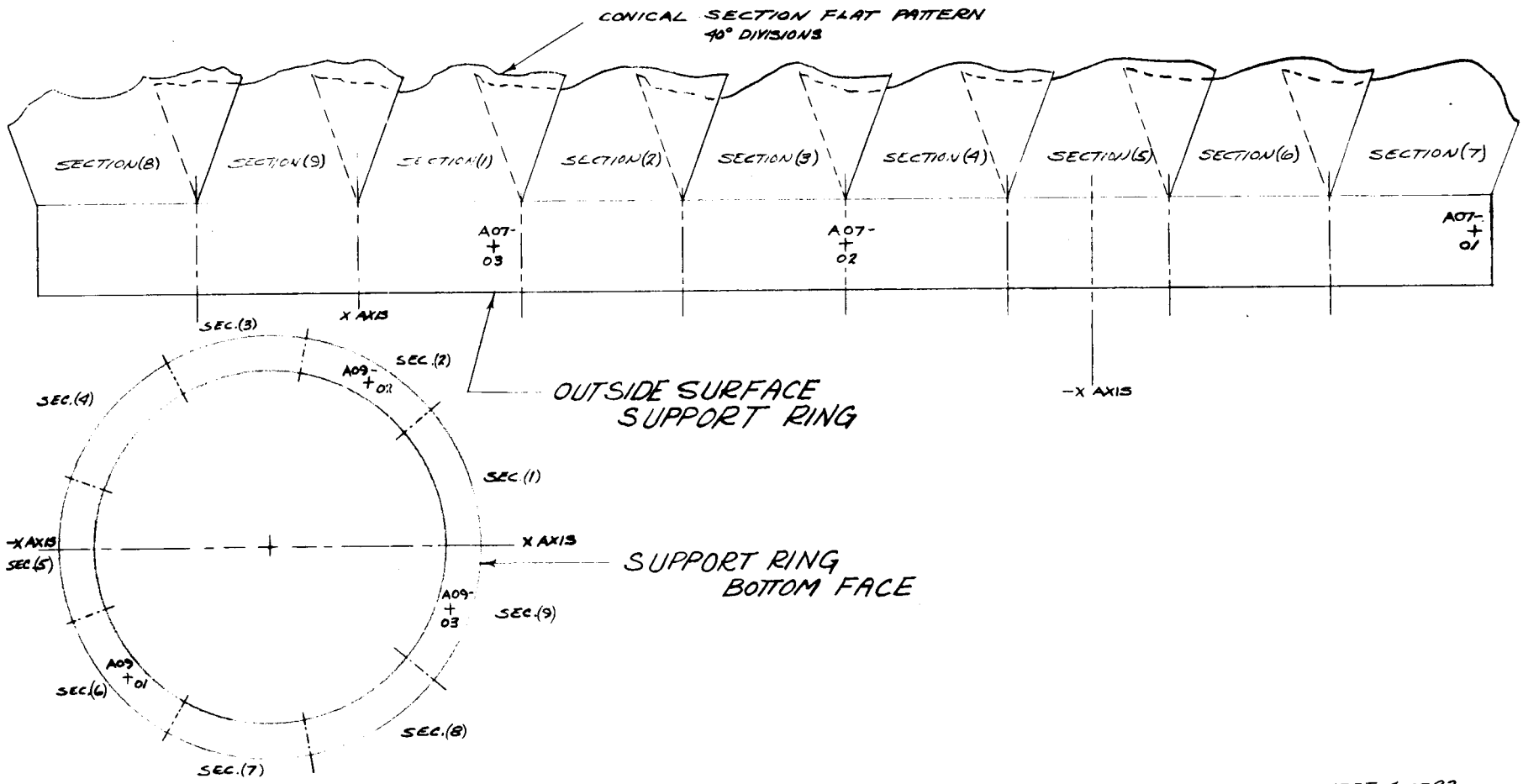
"COUPON DISTRIBUTION"
NO'S A03-01 TO A03-30
A04-01 TO A04-32
A05-01 TO A05-30
A06-01 TO A06-30



SHEET 3 OF 23

FIGURE 10 AEROSHELL
(SUPPORT RING, INSIDE)
SIDE VIEW

"COUPON DISTRIBUTION"
No's A07-01 TO A07-03
A09-01 TO A09-03

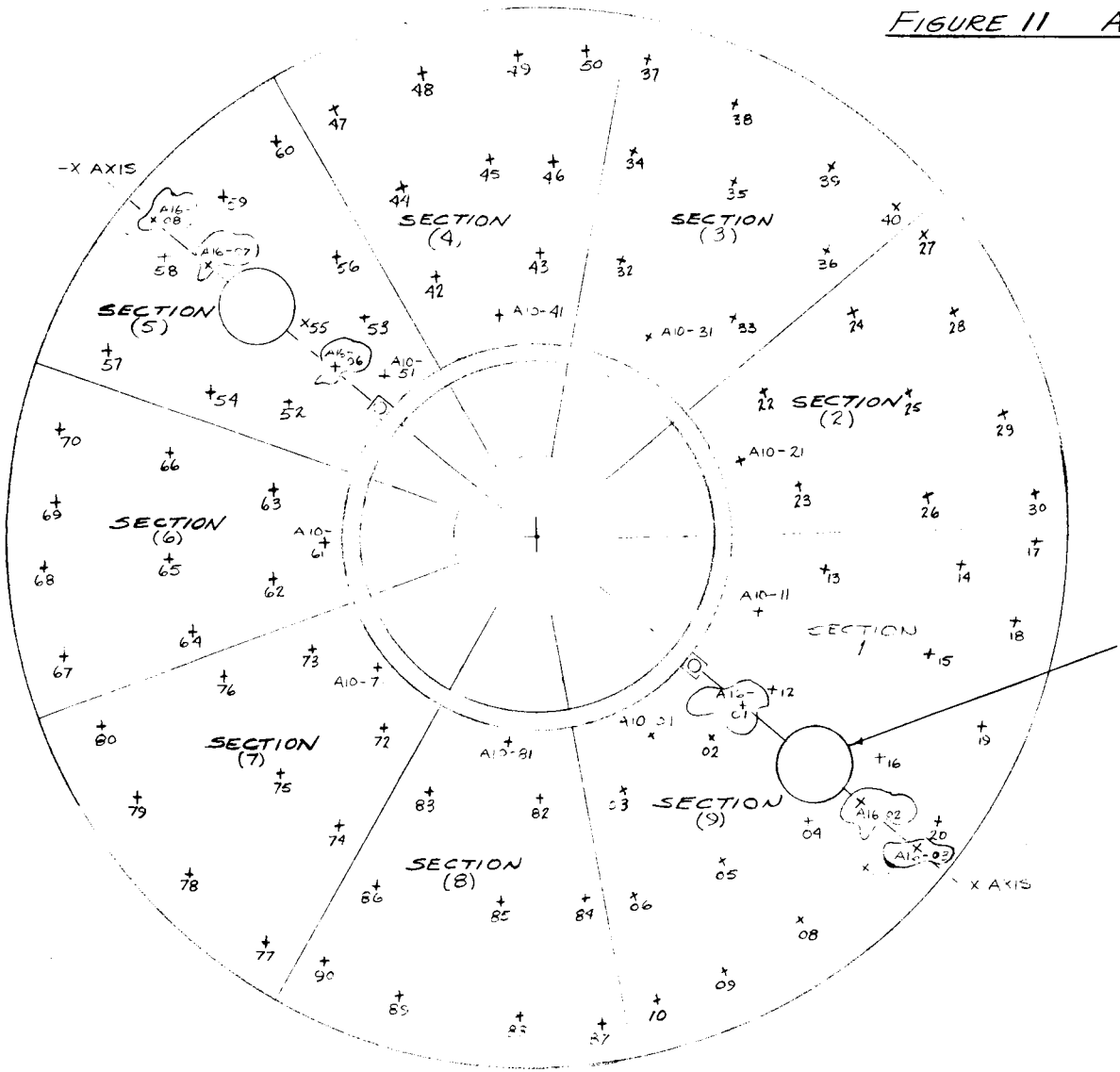


SHEET 4 OF 23

FIGURE 11 AEROSHELL

(UNDER SIDE VIEW)

"COUPON DISTRIBUTION"
NO'S A10-01 TO A10-90
A16-01 TO A16-03
A16-06 TO A16 08



INSIDE SURFACE (FRUSTRUM WITH CONICAL APEX)

ATTITUDE CONTROL FUEL TANKS (2)

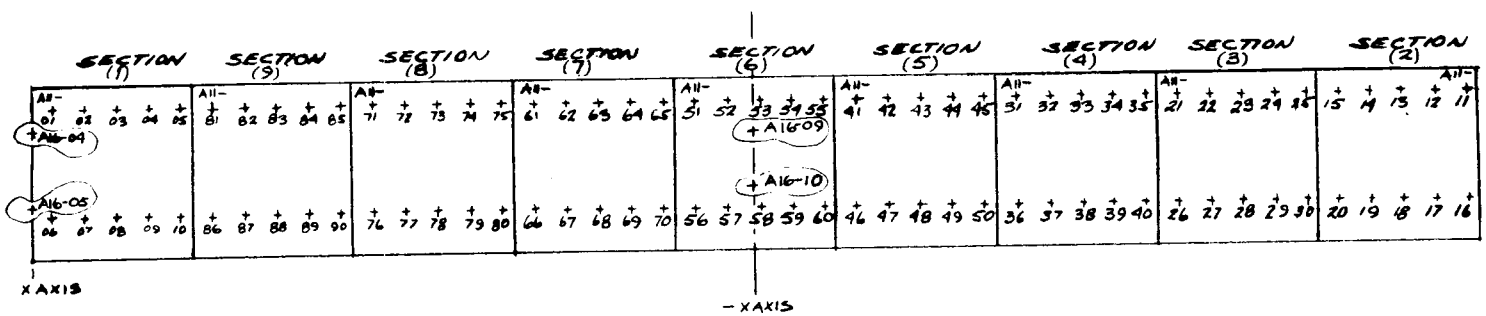
SHEET 5 OF 23

FIGURE 12

AEROSHELL (SIDE VIEW EXTENDED)

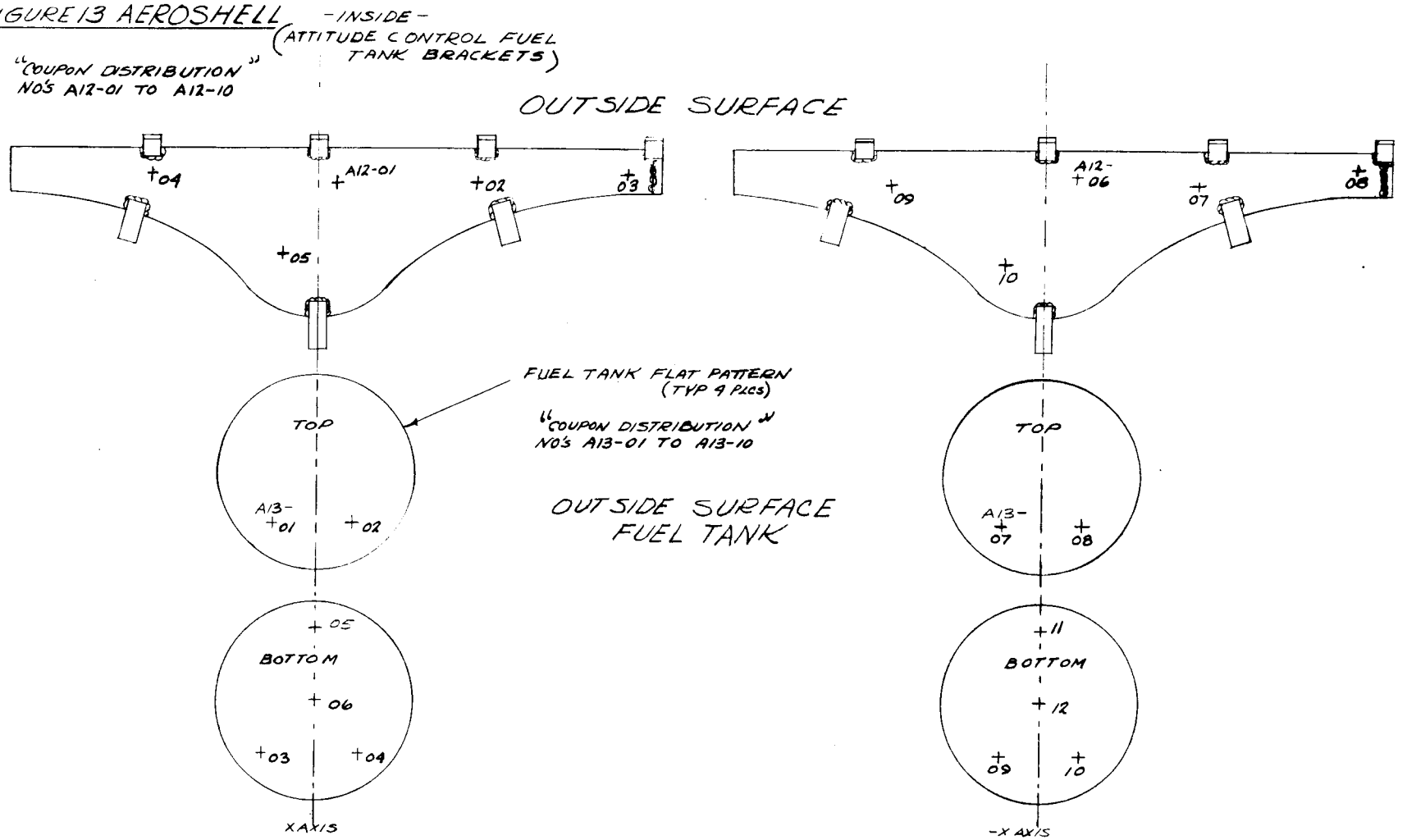
"COUPON DISTRIBUTION"
NOS A11-01 TO A11-90
A16-01 TO A16-05
A16-09 TO A16-10

INSIDE SURFACE CYLINDRICAL SECTION



SHEET 6 OF 23

FIGURE 13 AEROSHELL

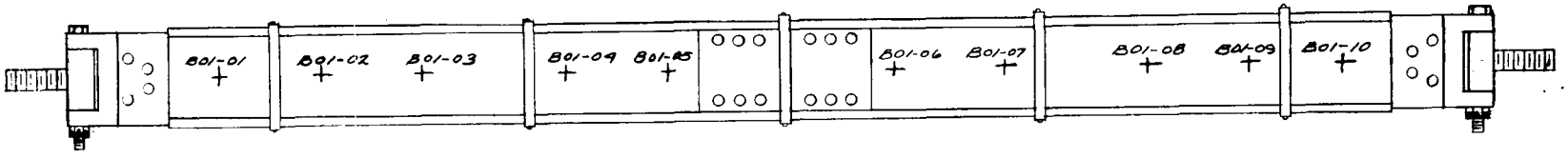


SHEET 7 OF 23

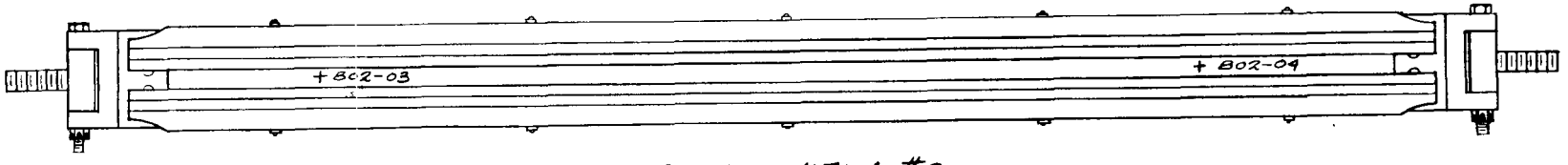
FIGURE 14 MARMON CLAMP
(FLAT PATTERN)

"COUPON DISTRIBUTION"
NO'S B01-01 TO B01-20
B02-01 TO B02-04
B03-01 TO B03-02

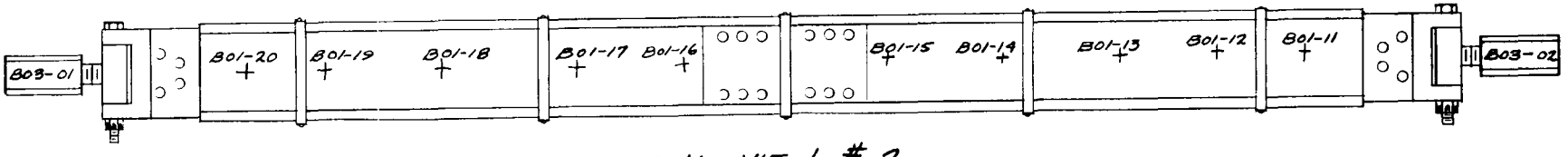
FRONT VIEW #1



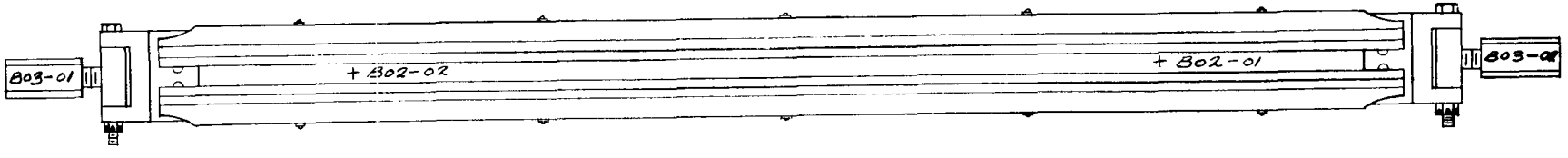
BACK VIEW #1



FRONT VIEW #2



BACK VIEW # 2

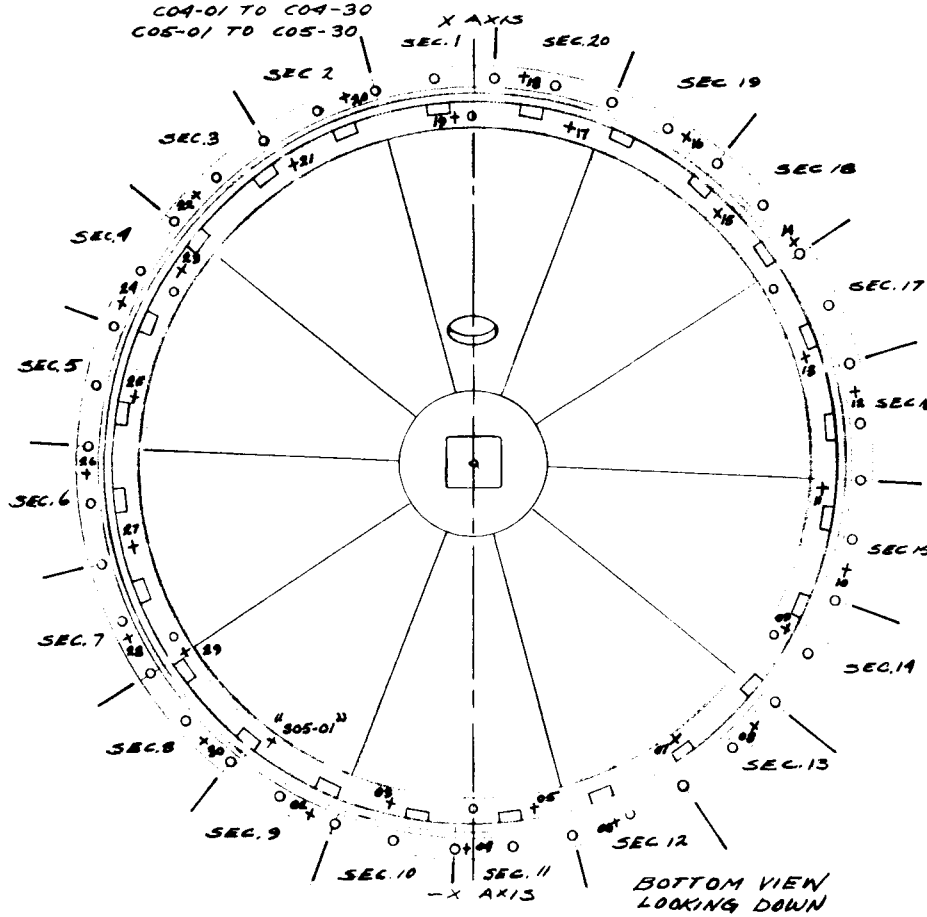


SHEET 8 OF 23

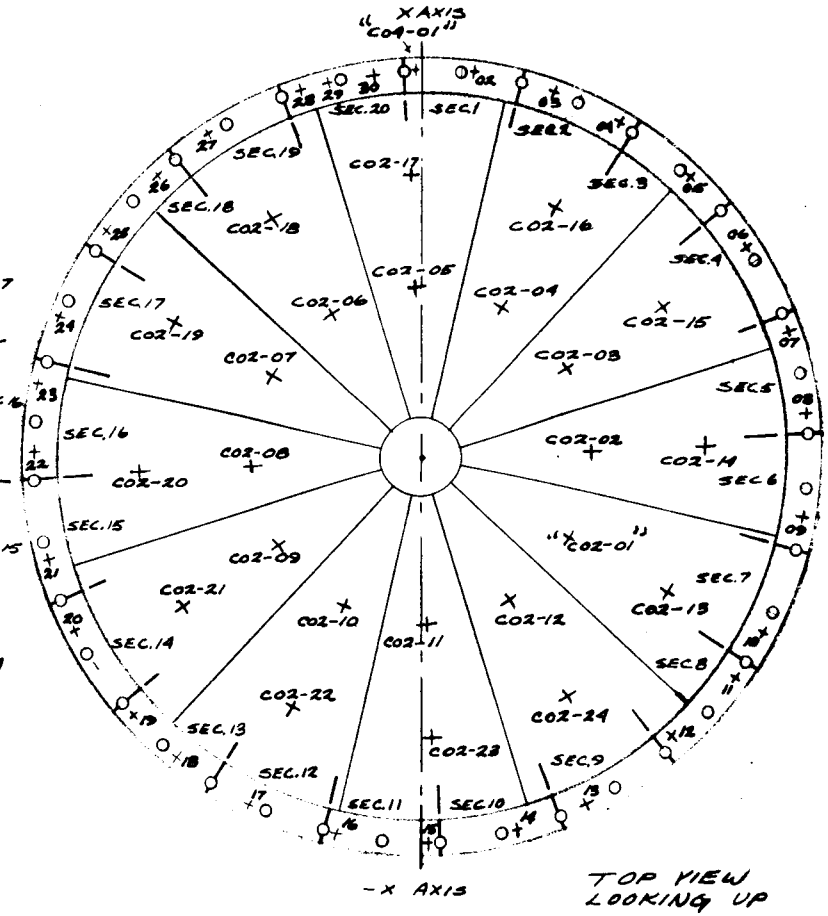
FIGURE 15 CANISTER

"COUPON DISTRIBUTION" (TOP & BOTTOM HALVES)

NO's C02-01 TO C02-24
C04-01 TO C04-30
C05-01 TO C05-30



BOTTOM VIEW
LOOKING DOWN



TOP VIEW
LOOKING UP

SHEET 9 OF 23

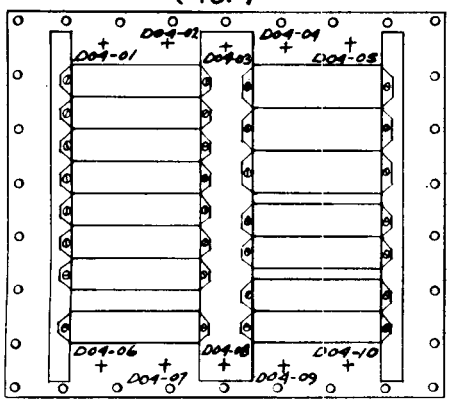
FIGURE 16
DUMMY CHASSIS

"COUPON DISTRIBUTION"
NO'S D01-01 TO D01-84
D02-01 TO D02-70
D04-01 TO D04-70

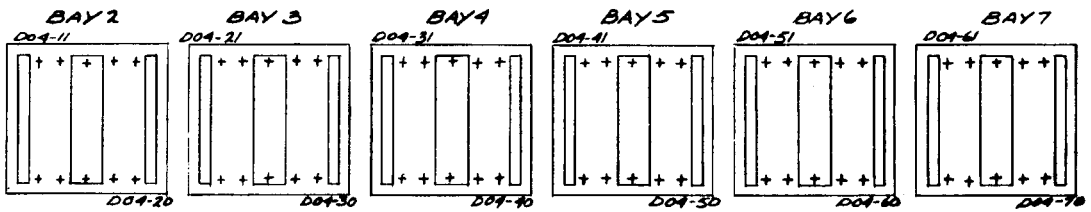
BAY 1

(TOP)

BACK VIEW

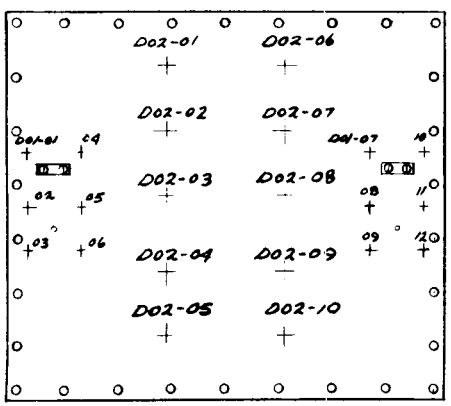


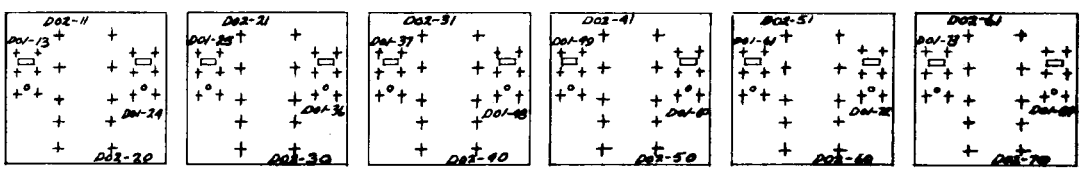
NOTE:
CHASSIS NO'S 1 THRU 7 ARE NUMBERED CONSECUTIVELY AS PER DRAWINGS. EACH COUPON POSITION (+) IS THE SAME THRU OUT, IN STEPS OF 10 & 12



(INSIDE SURFACES)

FRONT VIEW





(OUTSIDE SURFACES)

SHEET 10 OF 23

FIGURE 17 LIVE CHASSIS

"COUPON DISTRIBUTION"
NO'S D06-01 TO D06-12
D07-01 TO D07-10
D09-01 TO D09-10

BAY 8

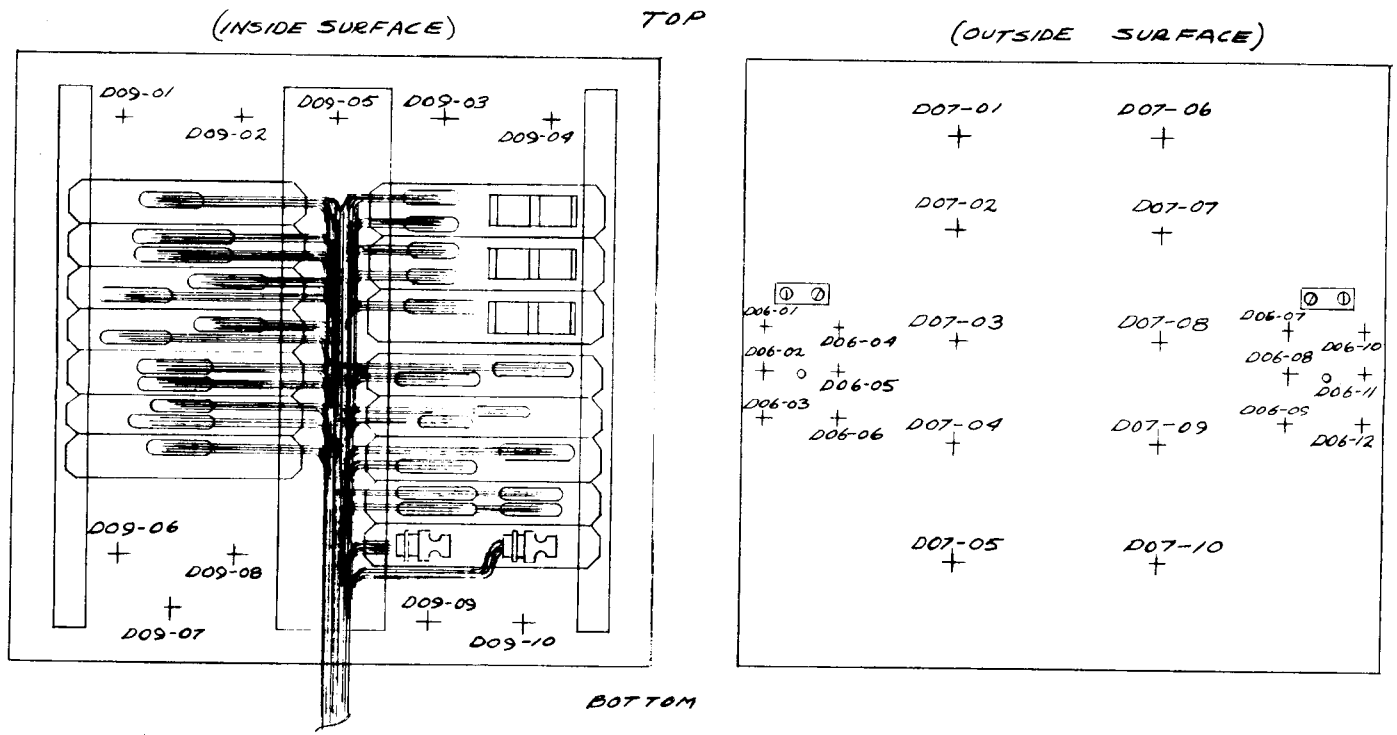


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FIGURE 18

IMPACT LIMITER

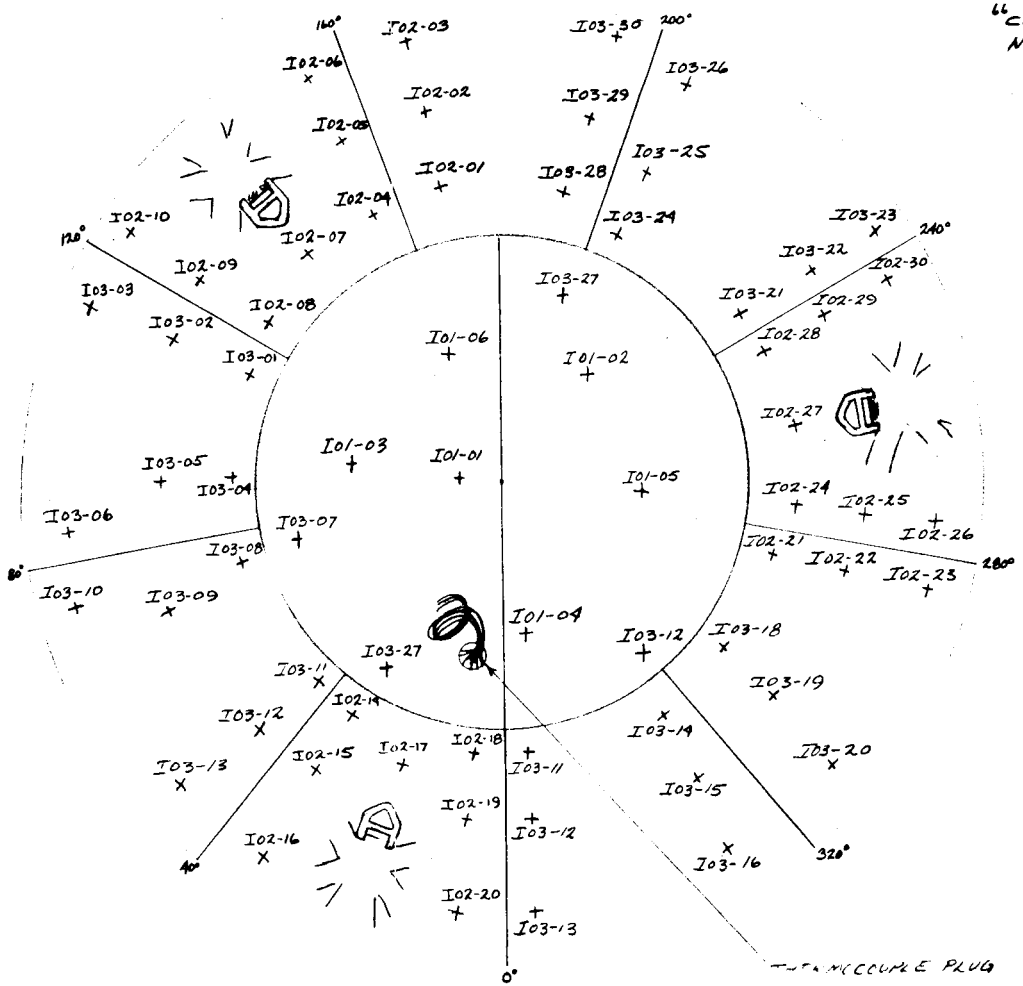
(TOP VIEW)

"COUPON DISTRIBUTION"

NO's I01-01 TO I01-06

I02-01 TO I02-30

I03-01 TO I03-30



OUTSIDE SURFACE
(TOP HALF)

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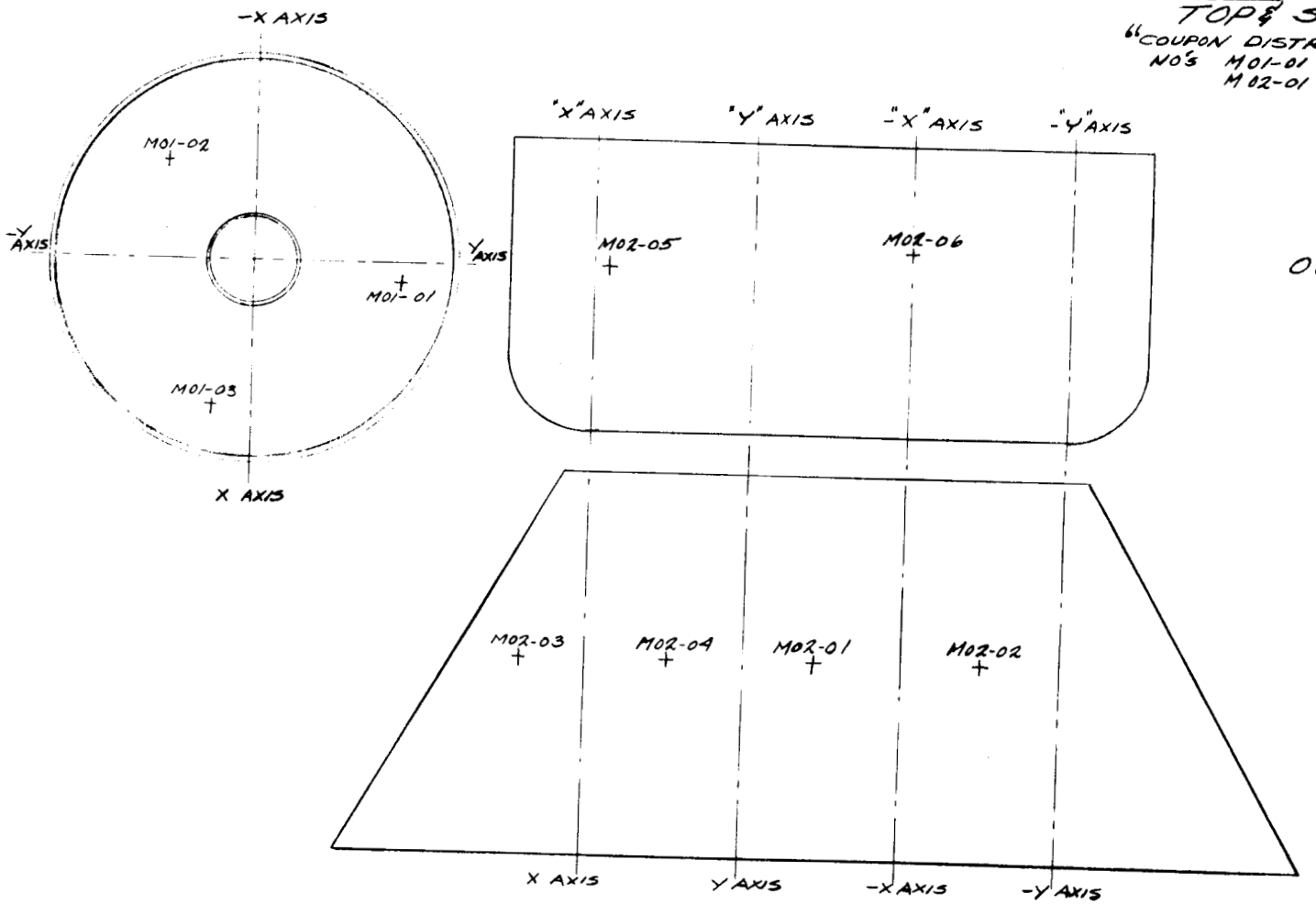
FIGURE 19 DE-ORBIT MOTOR
TOP & SIDE VIEW
"COUPON DISTRIBUTION"
NO'S M01-01 TO M01-03
M02-01 TO M02-06



OUT SIDE SURFACE
TOP & SIDE

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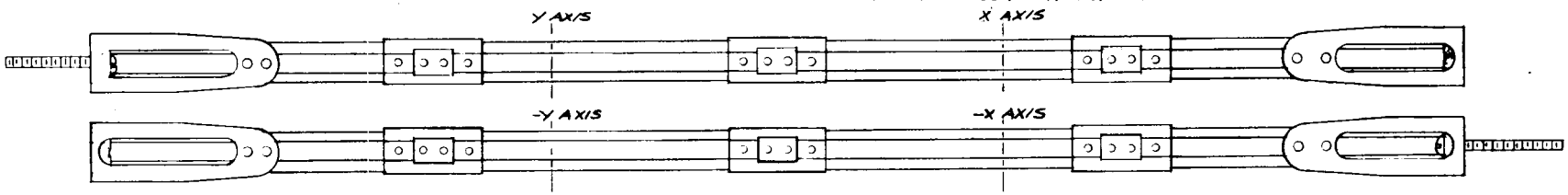
FIGURE 20 DE-ORBIT MOTOR

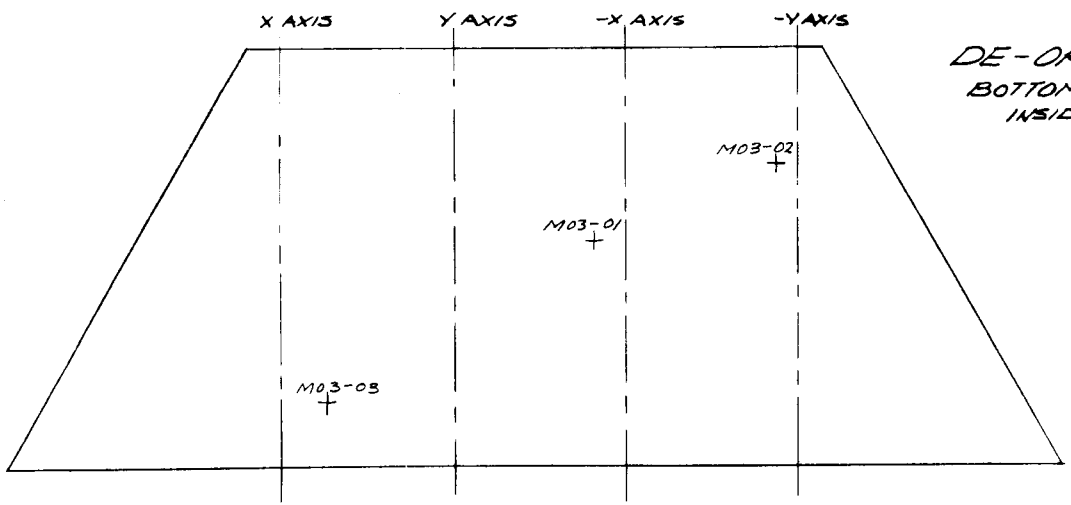
CLAMP & MOTOR BOTTOM

"COUPON DISTRIBUTION"
NOS 001-01 TO 001-04
M03-01 TO M03-03

CLAMPS
SIDE VIEW

BOTH HALVES FLAT PATTERN





DE-ORBIT MOTOR
BOTTOM FRUSTRUM
INSIDE FLAT PATTERN

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FIGURE 21
DE-ORBIT MOTOR CABLE HARNESS

COUPON DISTRIBUTION
NO'S M04-01 TO M04-10
M05-01 TO M05-02
U02-06

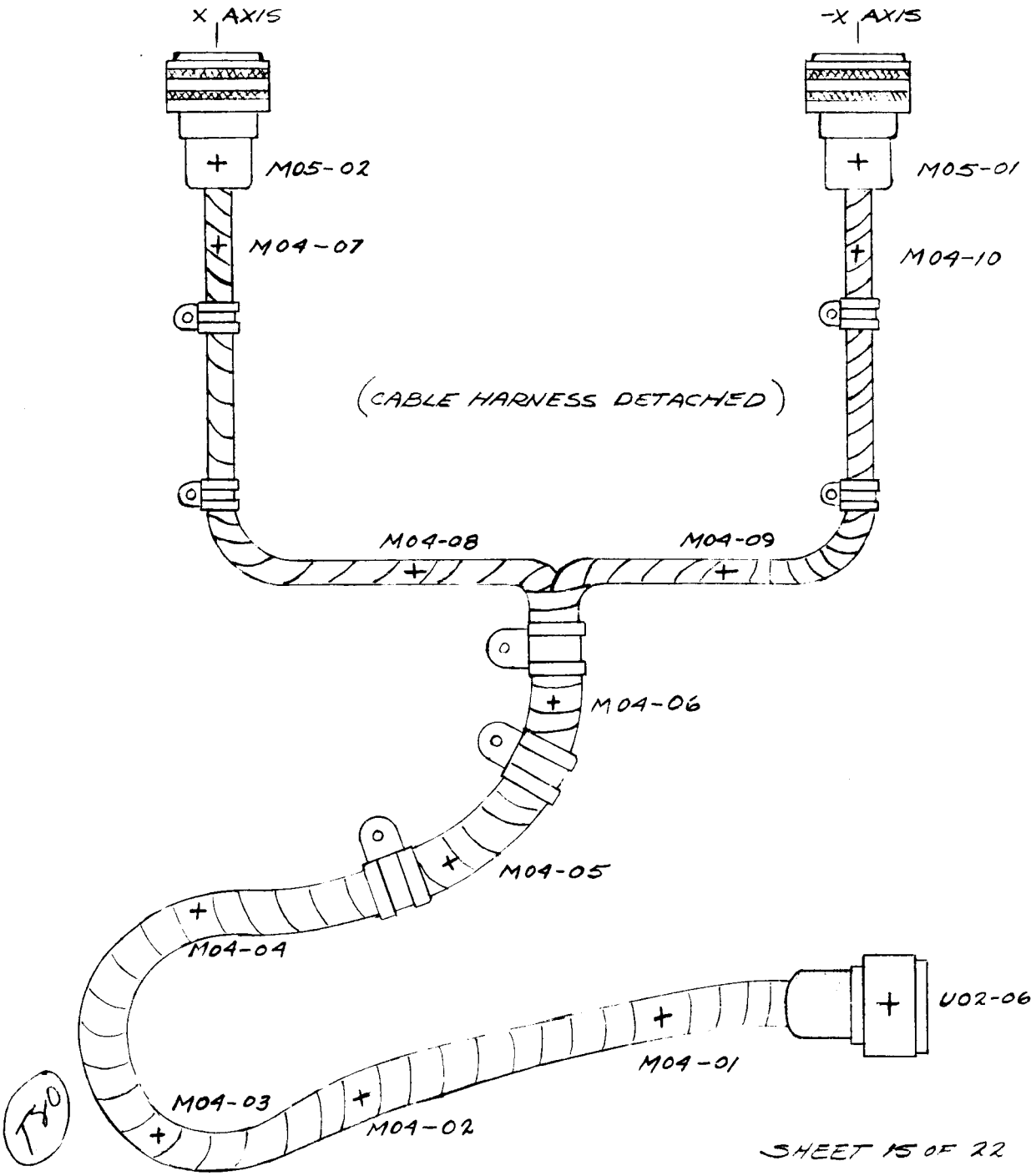

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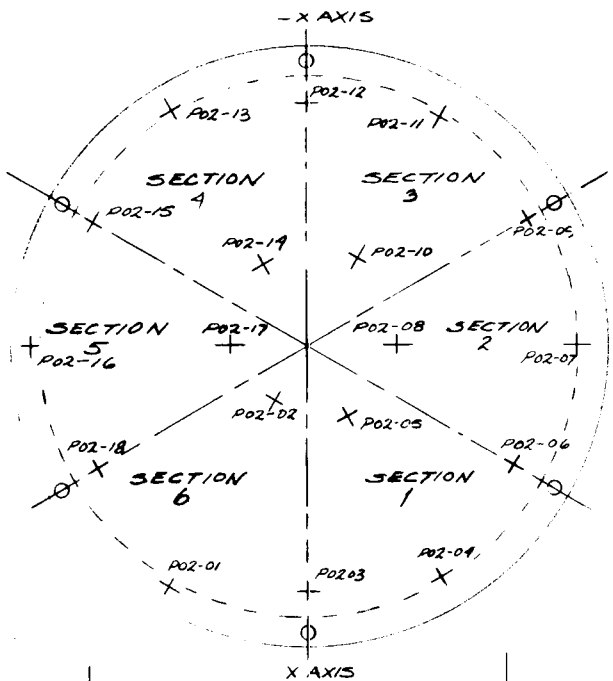
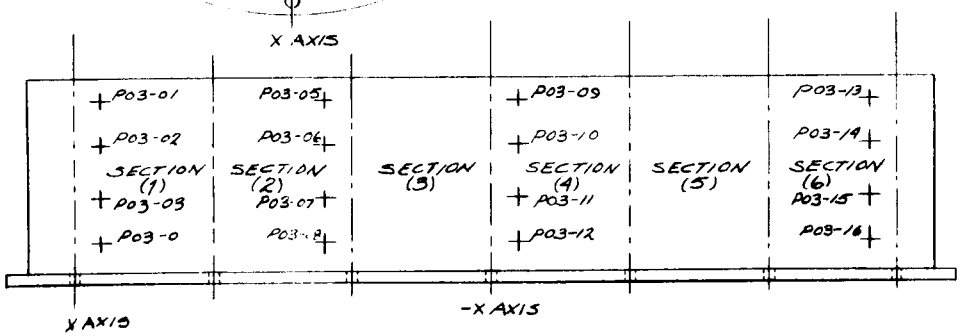
FIGURE 22 PARACHUTE CANISTER
2 VIEWS

"COUPON DISTRIBUTION"
NO'S P02-01 TO P02-18
P03-01 TO P03-16



CANISTER
BOTTOM
VIEW
(OUTSIDE SURFACE)



CANISTER
SIDE VIEW
(OUTSIDE SURFACE)

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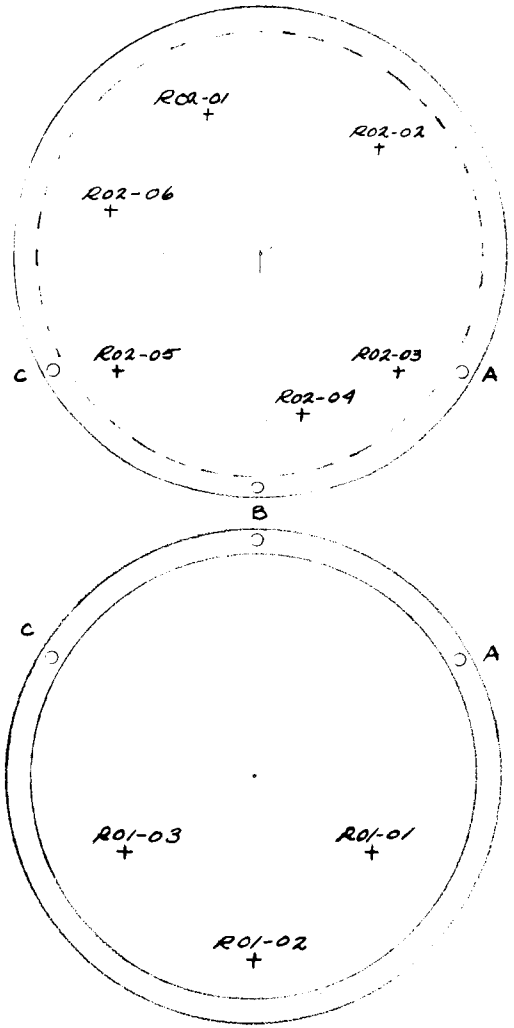
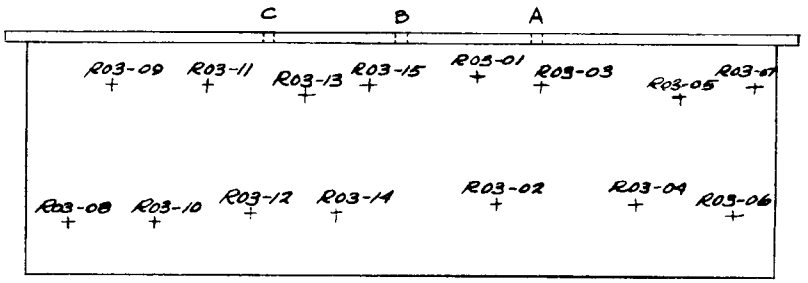
FIGURE 23 ANTENNA (TRI-VIEW)

"COUPON DISTRIBUTION"

NO'S R01-01 TO [illegible]
R02-01 TO R02-06
R03-01 TO R03-15



BOTTOM VIEW



SIDE VIEW

TOP VIEW

FIGURE 24
PAYLOAD CHASSIS
"COUPON DISTRIBUTION"
NO'S S01-01 TO S01-08
S02-01 TO S02-64
S08-01 TO S08-46

OUTSIDE SURFACE PAYLOAD
FLAT PATTERN

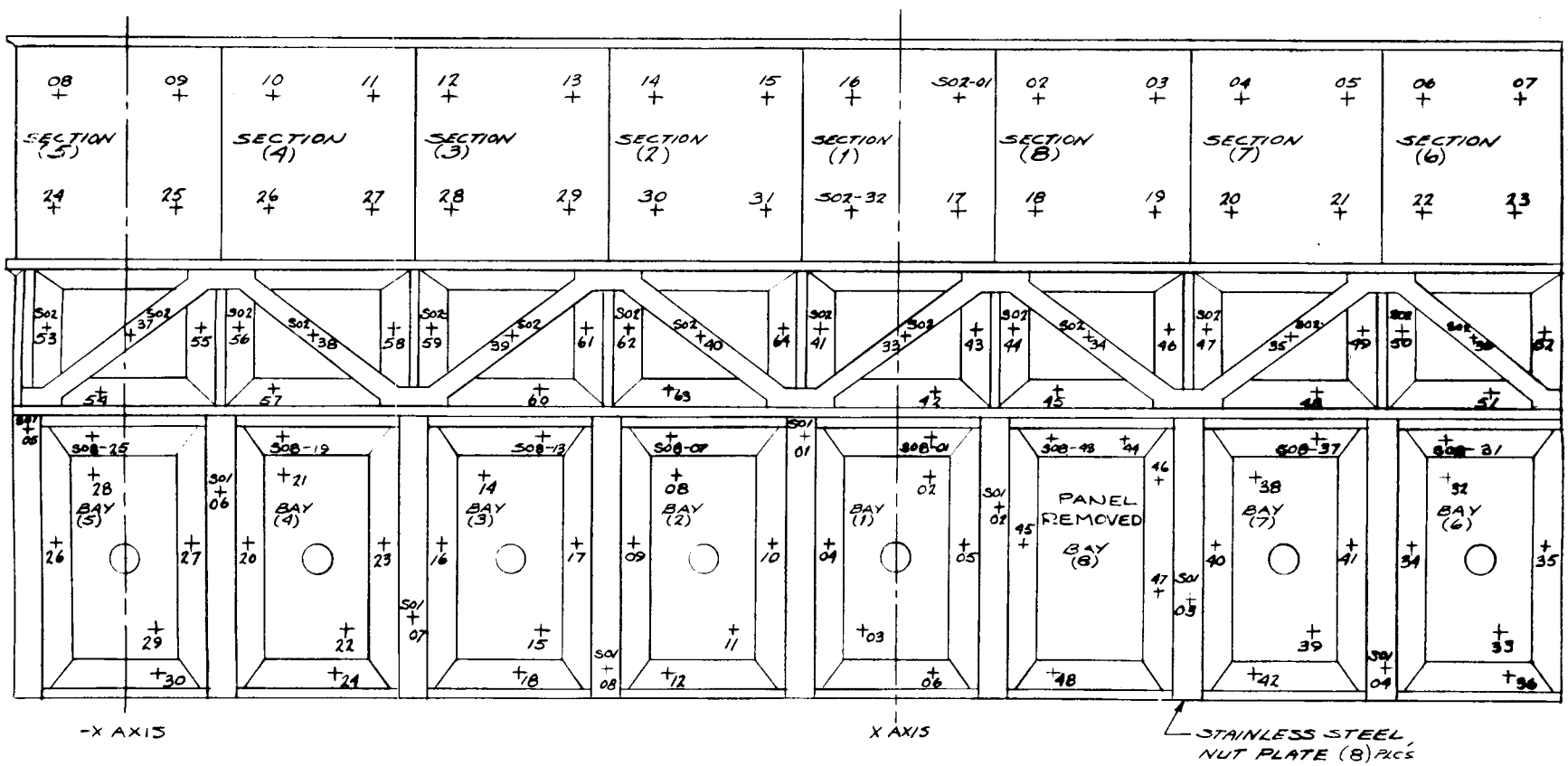


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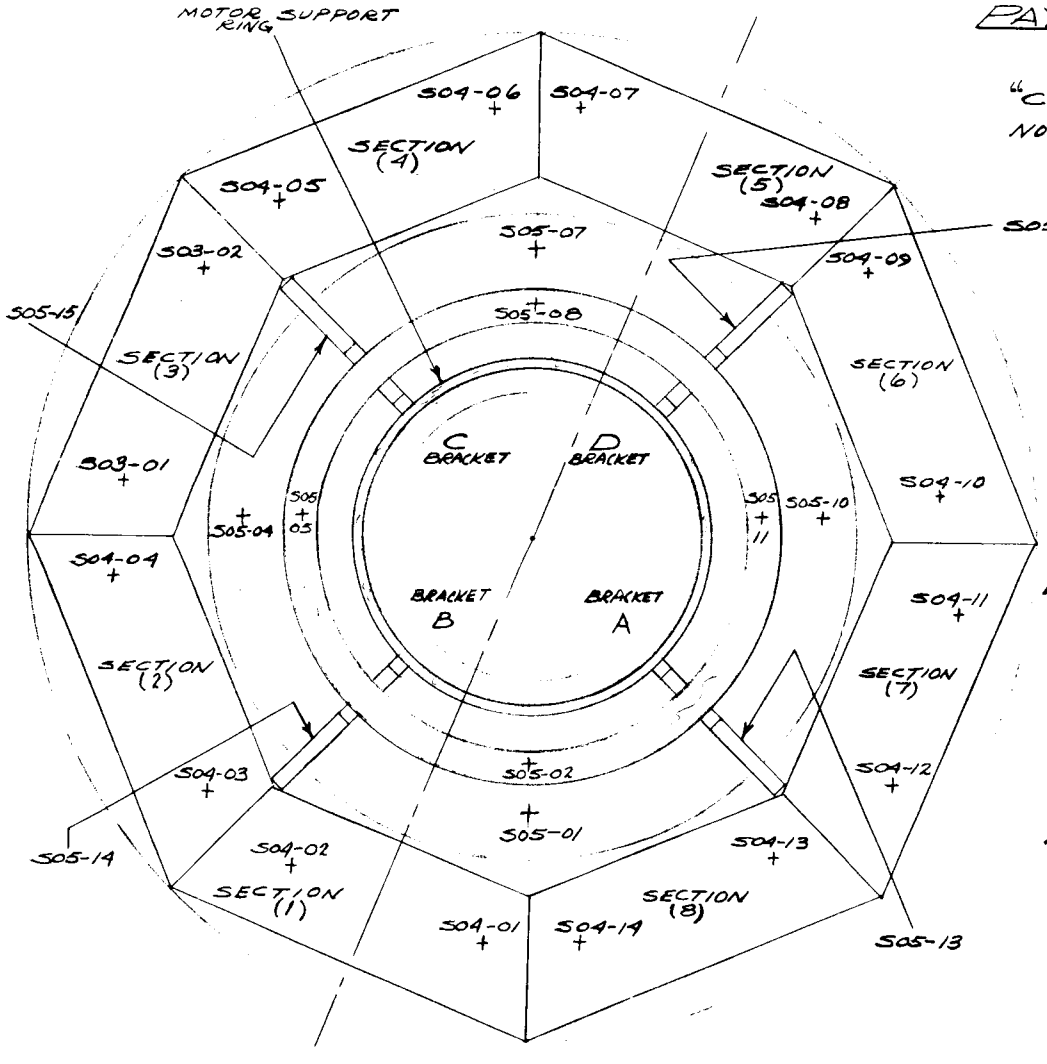
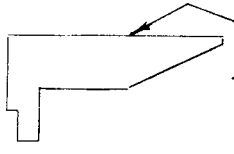
FIGURE 25

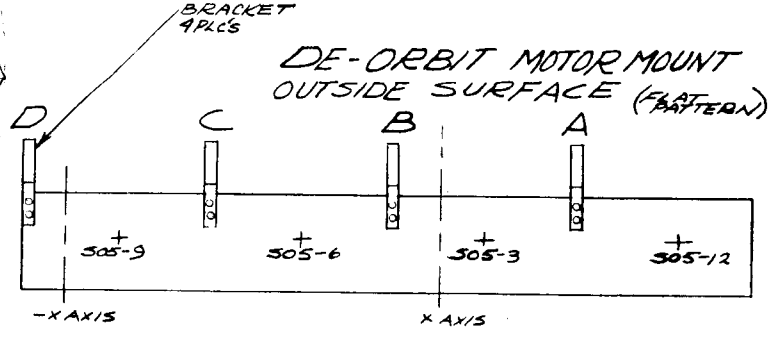
PAYLOAD (BOTTOM VIEW LOOKING UP)

"COUPON DISTRIBUTION

NO'S	303-01	TO	303-2
	304-01	TO	304-
	305-01	TO	305-16
	307-01	TO	307-8







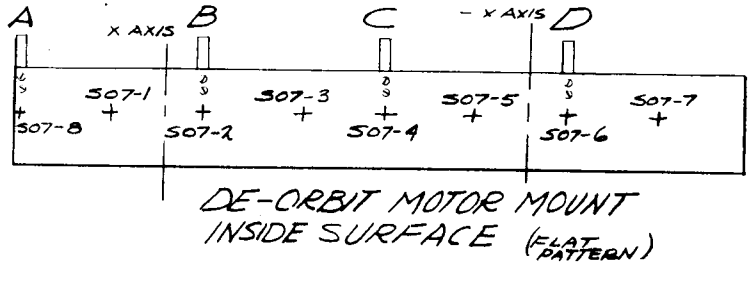


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FIGURE 26 PAYLOAD

(TOP VIEW LOOKING DOWN)

"COUPON DISTRIBUTION"

No's S06-01 TO S06-06

S11-01 TO S11-06

S12-01 TO S12-06

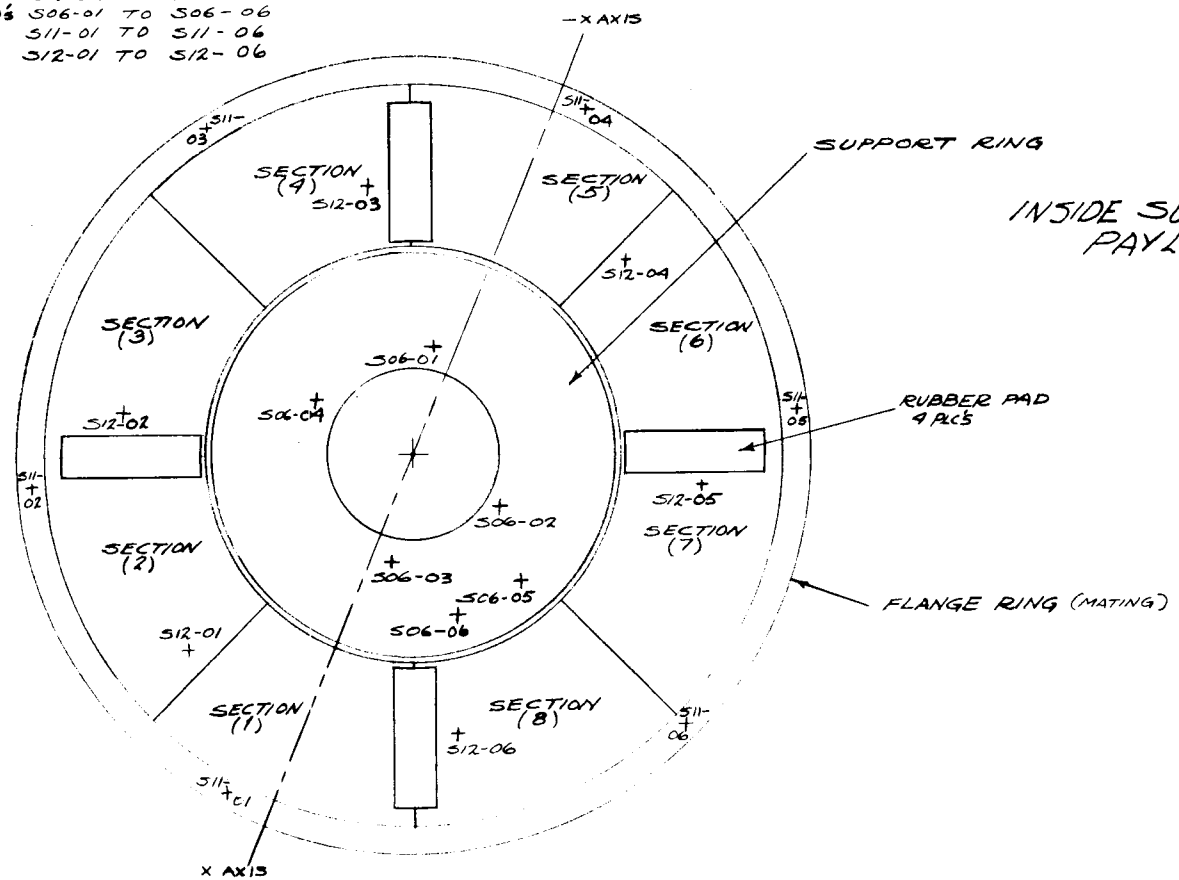

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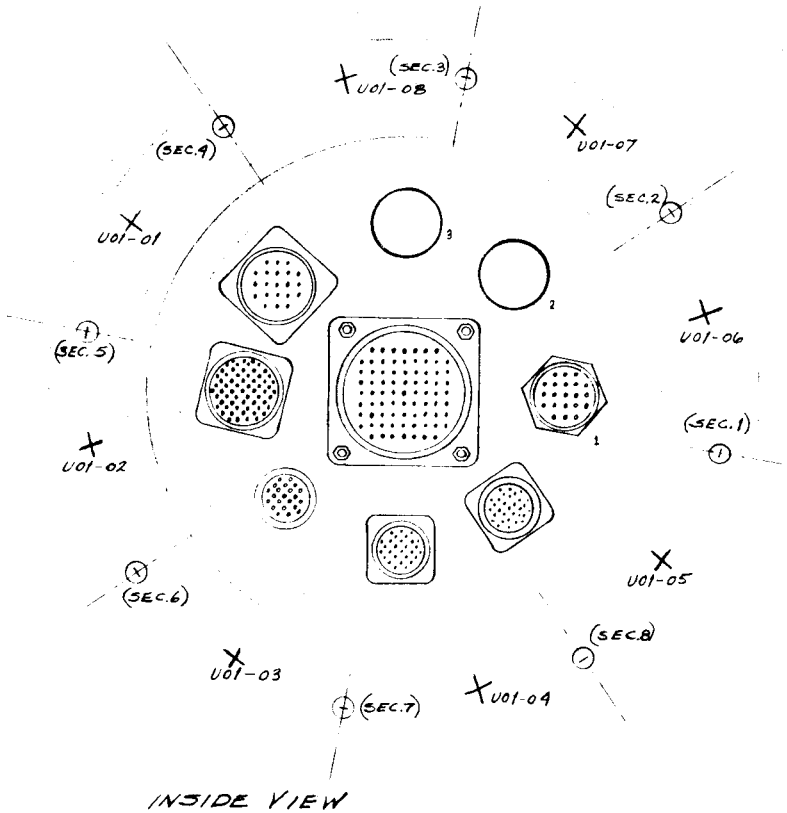
FIGURE 27 UMBILICAL PLATE

"COUPON DISTRIBUTION"
NO'S U01-01 TO U01-21



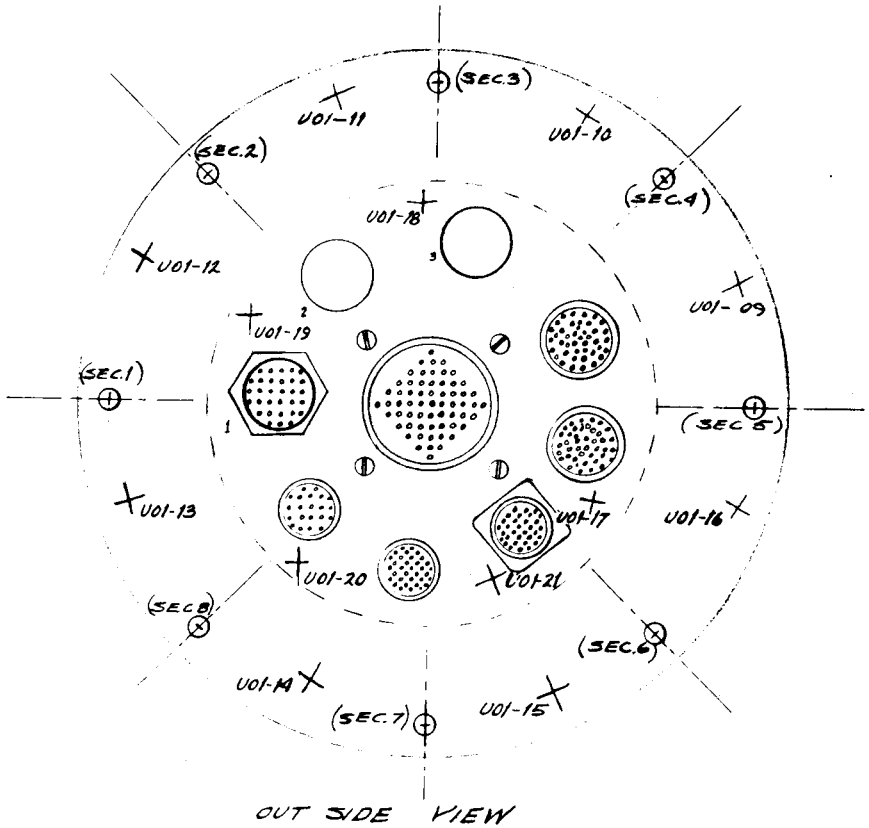


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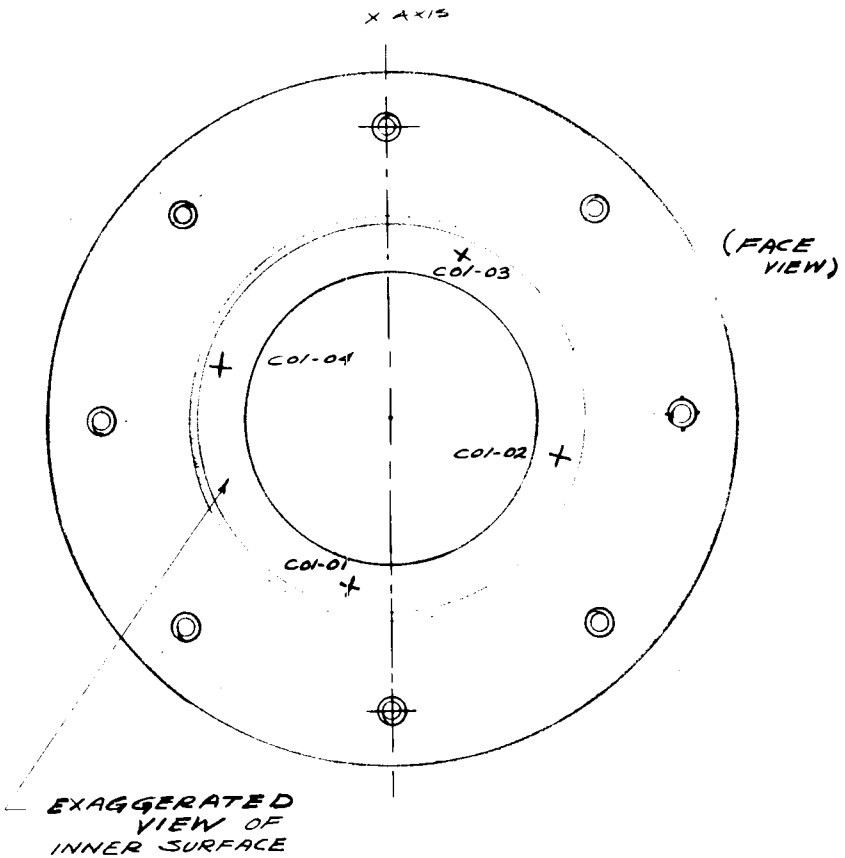
FIGURE 28 UMBILICAL FLANGE CONNECTION

"COUPON DISTRIBUTION"
NO'S C01-01 TO C01-04



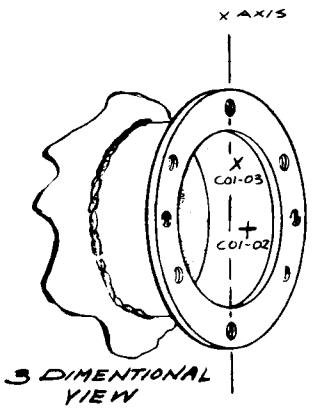


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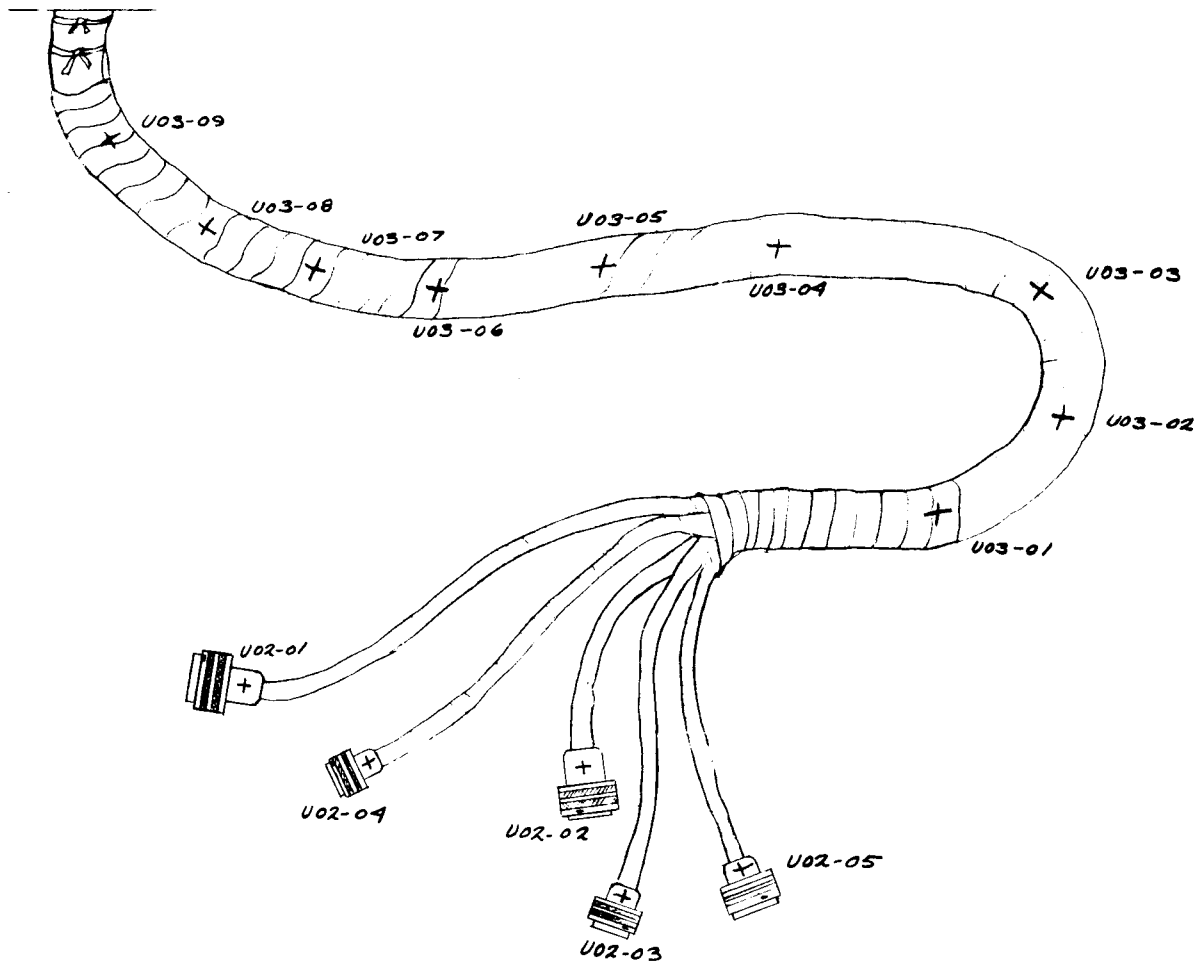
FIGURE 29

BAY 8 UMBILICAL HARNESS

"COUPON DISTRIBUTION"
NO'S U02-01 TO U02-05
U03-01 TO U03-09



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