



U.S. Department of Transportation  
Pipeline and Hazardous Materials  
Safety Administration

1200 New Jersey Ave, S.E.  
Washington, D.C. 20590

71-3080

Norma Garcia-Santos, Project Manager  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety and Safeguards (NMSS)  
U.S. Nuclear Regulatory Commission  
Two White Flint North - Mail Stop T4-B34  
11545 Rockville Pike  
Rockville, MD 20852-2738

JUL 15 2015

Dear Ms. Garcia-Santos:

In accordance with the Memorandum of Understanding between our agencies, on May 7, 2015, I submitted a request for review of the German Certificate of Approval No. D/4365/AF-96, Revision 2 for the ANF-50 package. By letter dated June 10, 2015 (Docket No. 71-3080, TAC No. L25016), you provided a Request for Additional Information.

Enclosed is the response to your request provided by our applicant, Areva TN.

If you have any questions or need any additional safety information, please feel free to contact Michael Conroy of my staff at (202) 366-3597 or via email at Michael.Conroy@dot.gov.

Sincerely,

Richard Boyle  
Division of Engineering and Research  
Office of Hazardous Materials Safety

Enclosure

NMSS01



E-42425  
July 10, 2015

U.S. Department of Transportation  
Attn: Mr. Richard W. Boyle, Chief  
Pipeline & Hazardous Materials Safety Administration  
Radioactive Materials Branch  
1200 New Jersey Avenue, S.E.  
East Building, PHH-20  
Washington, DC 20590

Subject: Competent Authority Certification (CAC), USA/0745/AF-96, Request for  
Additional Information for the Model ANF-50 Package

References: Letter E-41337, dated April 15, 2015 to Mr. Richard W. Boyle (U.S. DOT) from  
Paul Triska (AREVA TN), Revalidation Application for German Certificate of  
Approval D/4365/AF-96 (Revision 2) for the ANF-50

Letter dated June 10, 2015 to Richard W. Boyle (DOT) from Norma Garcia  
Santos (NRC), Request for Additional Information for the Model ANF-50  
Package, Revision 2

Dear Mr. Boyle:

This submittal provides the response to the request for additional information (RAI) forwarded by the  
NRC letter referenced above.

This submittal contains the following enclosures:

- Enclosure 1 provides the RAI item, followed by the AREVA Inc. response.

If you have questions or require further information, please call Glenn Mathues at 410-910-6538 or  
me at 410-910-6820.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Paul Triska'.

Paul Triska  
Vice President, Technical Services

Enclosures:

1. RAI Response

**AREVA TN**

---

AREVA Inc.  
7135 Minstrel Way - Suite 300 - Columbia, MD 21045 USA  
Tel.: (410) 910-6900 - Fax: (410) 910-6902  
us.aveva.com/AREVATN

**EVALUATION****RAI-1 CRITICALITY/SAFETY**

Explain and justify the following:

- a. the differences between the assumptions for the 2013 and 2015 criticality safety evaluation under hypothetical accident conditions (HAC) for Content No. 1 assuming exterior pellets are crushed and pellets enter the clamping area, and
- b. appropriateness of these changes in assumptions to adequately represent the package under HAC.

In the 2015 revalidation request, the applicant requested to decrease the criticality safety index (CSI) from 0.6 to 0.4. The CSI of 0.4 was included in the revalidation of the Certificate of Compliance (CoC) dated December 17, 2013 (ADAMS Accession No. ML 13353A620). The original certificate had a CSI of 0.6, however, in response to staff inquiries, the applicant decreased the CSI to 0.4. The staff questioned some results from Appendix 4.3-9 of BAM Test Report No. 111.3/10830/ANF-50, which showed that there was some damage to the outer pellets after the crush test. The HAC criticality model for Content No. 1 (i.e., intact pellets) did not assume damage to any of the pellets. To address the staff's question, the applicant submitted a HAC criticality evaluation on December 5, 2013 (ADAMS Accession No. ML 13347B366) that assumed damage to some of the outer rows of pellets and pellet fragments within the clamping space. To meet the upper subcriticality limit for this evaluation, the applicant reduced the array size from 6 x 6 x 8 (288 packages) to 5 x 6 x 6 (180 packages).

In the 2015 criticality analysis accompanying this revalidation request, the applicant included an updated HAC analysis for Content No. 1 starting in Section 7 of the report ANFG-5.061 (11), Revision 06, "Criticality Safety Analysis for the Transport Approval of ANF-50 Shipping Containers," starting on page 19 of 83. The discussion states that this analysis was performed with the 6 x 6 x 8 array and included pellet chips entering the clamping space. The results of these calculations are reported in Table 17 with the highest  $k_{eff}$  being  $0.8964 \pm 0.00083$ . In the 2013 calculation for the damaged periphery pellets with the smaller 5 x 6 x 6 array, the highest  $k_{eff}$  was  $0.9326 \pm 0.0008$ . The staff found that the application submitted in May 2015, did not contain sufficient information for justifying a lower  $k_{eff}$  for this calculation than the one performed in 2013.

This information is needed to determine compliance with paragraphs 671(a), 679, and 682 of the "Regulations for the Safe Transport of Radioactive Material," 2009 Edition, International Atomic Energy Agency (IAEA), No. TS-R-1.

**Response to RAI-1**

The criticality model as detailed in revisions 1 through 3 of the ANF-50 criticality report, ANFG 5.061 (11), did not include pellet chips in the clamping spacing above the pellet trays within the pellet box. In conjunction with the initial validation in the U.S., approved in January 2014, the U.S. competent authority requested the applicant to justify the use of intact pellets for content number 1 in the criticality analysis. The applicant completed and submitted a calculation that demonstrated subcriticality for the pellet chips that penetrated into the clamping spacing. This analysis is documented in ANFG-5.061 (073) Revision 1 as an addendum to the criticality report ANFG 5.061 (11) Revision 3, and was previously provided as an enclosure to AREVA TN letter E-37130, dated December 5, 2013.

For the ANF-50 German Certificate of Approval, D/4365/AF-96 renewal, the applicant incorporated comments from previous criticality calculations in the revised criticality report, ANFG-5.061 (11) Revision 6, and revised the criticality safety index (CSI) from the current value of 0.6 back to the CSI of 0.4. To support this, new calculations were performed using dimensions of a damaged ANF-50 as detailed in the test report, ANFG-11.119 (003E) Revision 0. This report was previously provided as part of Enclosure 3 to AREVA TN letter E-33729 dated November 13, 2012. The highlighted values in Figures 4 through 7 below are the actual measurements and the smallest dimension was chosen for the revised calculation.

Figure 1 shows the first criticality models. On the right side of Figure 1, a cut of an undamaged ANF-50 is shown with pellets on trays. There is no fissile material in the clamping spacing. The left side shows the very conservative damaged criticality model. The dimensions of the pellet box before and after drop testing remains unchanged (see red line). The overhang of the lid and the reduced frame size (that leads to more spacing between the pellet boxes) were not included in the model. In the addendum criticality report the clamping spacing was filled with pellet chips.

On Figure 2, there is a bottom side picture of the ANF-50 after drop testing. The blue line shows the real minimum dimension around the pellet box. There is the new damage model below the picture. It includes the lid overhang and the reduced frame size. The new dimensions as cited on page 9 of the criticality analysis, ANFG-5.061 (11) Revision 6 are seen in Figure 3 below. Figures 4 through 7 detail the actual dimensions from the four samples included in test report ANFG-11.119 (003E) Revision 0.

Figure 1: Comparison of Pellet Box of the Assumptions of an Undamaged and Damaged Criticality Model

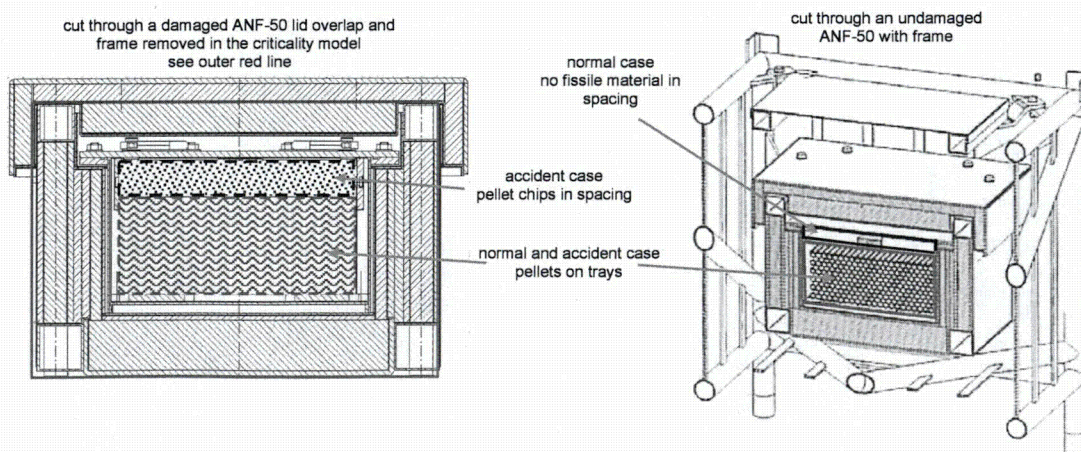
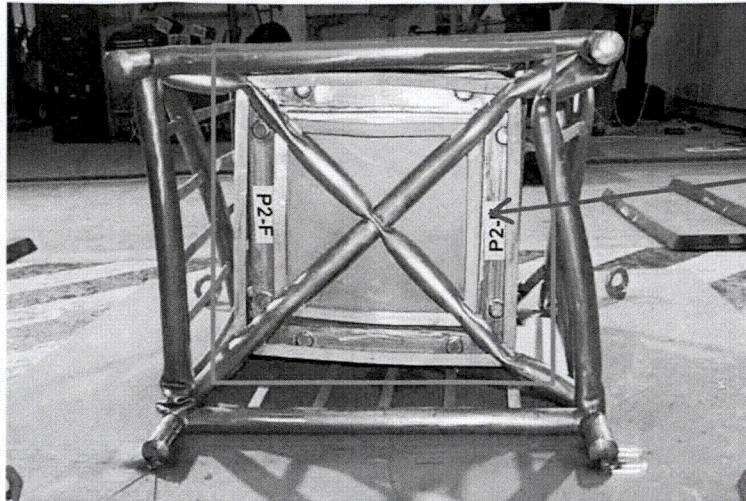
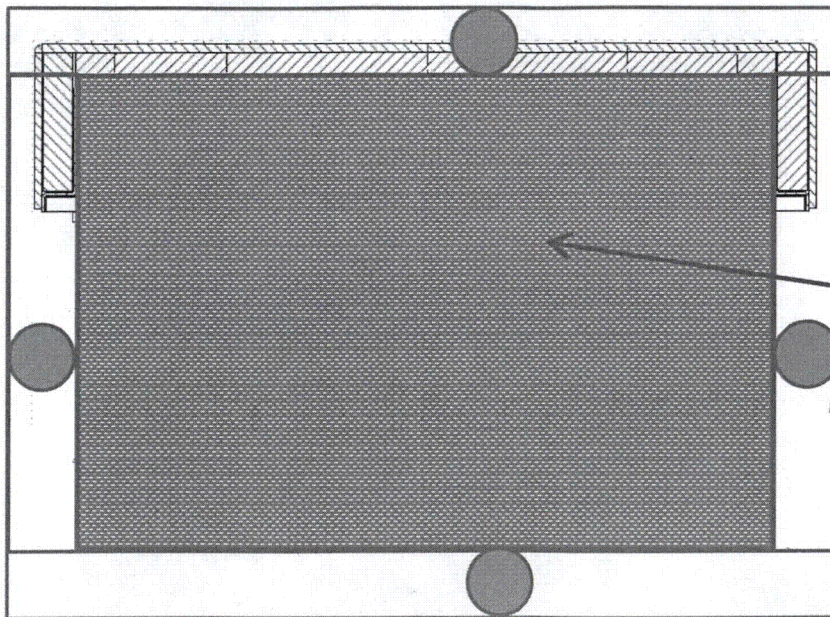




Figure 2: Damaged ANF-50 Container after Drop Test from the Bottom Side and Model Comparisons



dimensions for the criticality model  
beginning with revision 4;  
blue line shows the way of chosen  
dimension



scope of the first criticality model  
up to rev. 3 (red part)  
blue part shows the revised  
criticality model.

Figure 3: Dimensions as Cited in the Safety Report

ANFG-11.108 (02E)

Rev.08

Page 75 of 97

The criticality safety analyses for container licensing shall be performed for routine transport conditions (undamaged container), normal transport conditions (penetration test, drop test of 1.2 m) and accident transport conditions (crush test, drop test onto a vertical bar and thermal test). The initial licensing of the ANF-50 was based on this sequence of tests, see BAM test report no. 10830, "Drop tests and drop test specimens of the ANF-50 pellet shipping container" /R14/, ANF data compilation ANFG-11.119 (003) Rev. 000 "Measurement results for the ANF-50 shipping container (specimens 1 - 4) before / after the IAEA tests" /R11/ and IABG report no. B-TA-3926-Rev. 1 "Calculated simulation of the IAEA thermal test for the ANF-50 pellet shipping container" /R16/. With all specimens, the pellet containers with lid remained dimensionally stable; with respect to the even surface, a slight curvature to the outside was detected for the side walls and the pellet container lid. During the initial licensing - unlike the current verification procedure - criticality safety for accident transport conditions (2 x N array of containers) was proven with overly conservatively small outside dimensions. As a result, margins existing in reality were unnecessarily reduced. Based on the aforementioned test and measuring results, the outside dimensions of the ANF-50 with regard to the closest possible 2 x N array of containers under accident transport conditions was, therefore, defined more realistically (but nevertheless conservatively):

For the initial licensing of the ANF-50, only the outside dimensions of the pellet box case, without surrounding cover protrusion, was taken into account. The deformed, but still existing components (rack and protective cover) remained unconsidered altogether. The following outside dimensions were assumed: length: 477 mm, width: 441 mm, height: 317 mm.

Deriving the outside dimensions for accident transport conditions for the new application:

The outer contour of the pellet box case is defined by the outside dimensions of the surrounding protrusion of the cover and the height of the pellet box case, incl. the mounted case cover after the sequence of tests (conservative measuring results for all 4 specimens), length: 532 mm, width: 496 mm, height: 312 mm.

Since, after the sequence of tests, the rack and the protective cover in all 4 specimens were still connected to the pellet box case, this fact will be taken into account for the outside dimensions of the ANF-50 in a conservative way in accordance with the test report and the measuring results. Thus, the circumference dimensions of the pellet box case (length and width) on each side will be enlarged by half the rack tube diameter (42.4 mm x 0.5, rounded 21 mm). The height of the pellet box case with mounted case lid will be enlarged on both sides by the rack tube diameter (42.4 mm, rounded 42 mm).

The outside dimensions of the ANF-50 for the closest array for accident transport conditions are thus defined as follows (see also Figure 3):

- Length:  $532 \text{ mm} + 2 \times 0.5 \times 42 \text{ mm} = 574 \text{ mm}$
- Width:  $496 + 2 \times 0.5 \times 42 \text{ mm} = 538 \text{ mm}$
- Height:  $312 \text{ mm} + 2 \times 42 \text{ mm} = 396 \text{ mm}$

Figure 4: Results of Test Sample 1 as Shown in the Testing Report

test sample 1

ANFG-11.119 (003E)  
Rev. 000  
Appendix 2  
Page 2 of 9Rgite  
11

	Actual dimensions		Comment
	Before tests	After tests	
Counter-face to side face 2			
Length, bottom	701.6	704.9	
Length, top	701.0	709.3	
Diagonal struts, bottom			
Distance 1 from standing surface	199.3	194.6	
Distance 2 from standing surface	198.1	195.4	
Distance 3 from standing surface	199.5	196.0	
Distance 4 from standing surface	199.0	195.7	
Diagonal 1 - 3			
Top	970.5	*933.7	*Angle inside
Bottom (height: cross-tubes)	974.9	974.6	
Diagonal 2 - 4			
Top	976.0	*981.2	*Angle inside
Bottom (height: cross-tubes)	973.8	974.2	
Case for pellet box with lid for case			
Height			
Corner 1 (no.)	314.3	*312.2	*without weld
Corner 2	313.9	*312.7	*without weld
Corner 3	315.2	*313.0	*without weld
Corner 4	314.8	*312.2	*without weld
Side face 1			
Length, bottom	442.0	442.4	
Length, top	498.2	498.7	
Side face 2			
Length, bottom	476.7	476.8	
Length, top	532.9	533.1	
Counter-face to side face 1			
Length, bottom	441.5	441.0	
Length, top	498.9	498.4	

test sample 1

ANFG-11.119 (003E)  
Rev. 000  
Appendix 2  
Page 4 of 9

Distance of side face 1 from case for pellet box			
Distance 1 bottom	111.7	P-1 113.7	P-2 114.3
Distance 1 top	83.2	P-1 83.3	P-2 89.0
Distance 2 bottom	112.6	P-3 117.1	P-4 115.1
Distance 2 top	84.9	P-3 84.2	P-4 71.3
Distance of side face 2 from case for pellet box			
Distance 1 bottom	131.3	P-1 129.6	P-4 125.0
Distance 1 top	101.3	Dimensional inspection not possible	
Distance 2 bottom	129.8	P-2 134.1	P-3 131.7
Distance 2 top	99.6	Dimensional inspection not possible	
Lid for case			
Length	533.6	533.6	Middle
Width	498.6	498.5	Middle
Height	105.0/104.2/104.5	104.4/104.2	Height in P1-4
Diagonal 1 - 3	104.7	104.2	
Diagonal 2 - 4	724.2	724.0	
	724.0	723.9	
Groove for flange			
Depth 1 - 2	2.3	2.3	Middle
Depth 1 - 4	2.3	2.3	Middle
Depth 2 - 3	2.3	2.3	Middle
Depth 3 - 4	2.4	2.4	Middle
Width 1 - 2	4.0	4.0	Middle
Width 1 - 4	4.0	4.0	Middle
Width 2 - 3	4.0	4.0	Middle
Width 3 - 4	4.0	4.0	Middle
Edge 1 - 2	22.8	22.8	Middle - outside
Edge 1 - 4	23.4	23.4	Middle - outside
Edge 2 - 3	23.3	23.3	Middle - outside
Edge 3 - 4	22.9	22.9	Middle - outside
Protective lid			
Length	461.9	460.0	Middle
Width	438.1	435.9	Middle
Height	49.9/50.2/49.9/49.8	51.4/51.2/51.2/50.4	With lug
Diagonal 1 - 3	633.4	633.9	
Diagonal 2 - 4	633.7	631.6	

Figure 5: Results of Test Sample 2 as Shown in the Testing Report

*test sample 2*ANFG-11.119 (003E)  
Rev. 000  
Appendix 3  
Page 2 of 5

	Actual dimensions		Comment
	Before tests	After tests	
<b>Counter-face to side face 2</b>			
Length, bottom	701.2	812.4	
Length, top	700.7	821.4	
<b>Diagonal struts, bottom</b>			
Distance 1 from standing surface	200.8	204.3	
Distance 2 from standing surface	197.4	199.1	
Distance 3 from standing surface	195.0	196.4	
Distance 4 from standing surface	195.8	197.8	
<b>Diagonal 1 - 3</b>			
Top	669.6	924.5	
Bottom (height: cross-tubes)	975.1	921.6	
<b>Diagonal 2 - 4</b>			
Top	978.0	922.3	
Bottom (height: cross-tubes)	974.8	908.2	
<b>Case for pallet box with lid for case</b>			
<b>Height</b>			
Corner 1 (no.)	315.6	*312.3	*without weld
Corner 2	316.9	*314.2	*without weld
Corner 3	318.4	*313.0	*without weld
Corner 4	316.1	*313.7	*without weld
<b>Side face 1</b>			
Length, bottom	440.5	440.3	
Length, top	499.4	499.6	
<b>Side face 2</b>			
Length, bottom	476.1	475.8	
Length, top	534.0	533.9	
<b>Counter-face to side face 1</b>			
Length, bottom	441.0	440.9	
Length, top	499.2	499.0	

*test sample 2*ANFG-11.119 (003E)  
Rev. 000  
Appendix 3  
Page 4 of 5

	Actual dimensions		Comment
	Before tests	After tests	
<b>Distance of side face 1 from case for pallet box</b>			
Distance 1 bottom	111.4	P-1 64.9 P-2 60.3	
Distance 1 top	81.9	P-1 38.2 P-2 17.6	
Distance 2 bottom	111.9	P-3 31.0 P-4 71.6	
Distance 2 top	82.4	P-3 69.5 P-4 43.5	
<b>Distance of side face 2 from case for pallet box</b>			
Distance 1 bottom	128.7	P-1 145.0 P-2 147.8	
Distance 1 top	99.2	P-1 113.2 P-2 123.5	
Distance 2 bottom	131.3	P-2 150.5 P-3 130.3	
Distance 2 top	102.3	P-2 125.1 P-3 105.5	
<b>Casing cover</b>			
Length	535.5	535.5	Middle
Width	499.6	499.5	Middle
Height	105.1/104.7/105.0	103.6/103.9	Height in P14
Diagonal 1 - 3	104.4	105.0	
Diagonal 2 - 4	724.9	725.0	
	725.7	725.8	
<b>Groove for flange</b>			
Depth 1 - 2	2.4	2.4	Middle
Depth 1 - 4	2.3	2.3	Middle
Depth 2 - 3	2.3	2.3	Middle
Depth 3 - 4	2.3	2.3	Middle
Width 1 - 2	4.0	4.0	Middle
Width 1 - 4	4.0	4.0	Middle
Width 2 - 3	4.0	4.0	Middle
Width 3 - 4	4.0	4.0	Middle
Edge 1 - 2	23.1	23.1	Middle - outside
Edge 1 - 4	23.0	23.0	Middle - outside
Edge 2 - 3	23.0	23.0	Middle - outside
Edge 3 - 4	22.4	22.4	Middle - outside
<b>Protective lid</b>			
Length	462.5	460.8	Middle
Width	438.2	435.9	Middle
Height	50.1/50.4/50.0/49.9	50.7/51.2/51.2	W in lug
Diagonal 1 - 3		50.6	
Diagonal 2 - 4	634.0	634.3	
	634.6	633.7	



Figure 6: Results of Test Sample 3 as Shown in the Testing Report

*test sample 3*

ANFG-11.119 (003E)  
Rev. 000  
Appendix 4  
Page 2 of 11

	Actual dimensions		Comment
	Before tests	After tests	
Counter-face to side face 2			
Length, bottom	700.1	683.9	
Length, top	699.8	716.2	
Diagonal struts, bottom			
Distance 1 from standing surface	195.7	173.8	
Distance 2 from standing surface	197.3	198.1	
Distance 3 from standing surface	198.5	181.2	Foot position diagonal
Distance 4 from standing surface	198.4	235.5	
Diagonal 1 - 3			
Top	971.3	1082.5	
Bottom (height cross-tubes)	975.7	1097.0	
Diagonal 2 - 4			
Top	976.3	795.2	
Bottom (height cross-tubes)	973.7	826.4	
Case for pellet box with lid for case			
Height			
Corner 1 (no.)	314.4	*314.6	*without weld
Corner 2	315.2	*312.8	*without weld
Corner 3	315.4	*313.6	*without weld
Corner 4	315.0	*312.8	*without weld
Side face 1			
Length, bottom	439.5	439.3	
Length, top	498.5	499.0	
Side face 2			
Length, bottom	475.3	475.6	
Length, top	533.3	533.6	
Counter-face to side face 1			
Length, bottom	440.2	440.0	
Length, top	498.4	498.7	

*test sample 3*

ANFG-11.119 (003E)  
Rev. 000  
Appendix 4  
Page 4 of 11

	Actual dimensions		Comment
	Before tests	After tests	
Distance of side face 1 from case for pellet box			
Distance 1 bottom	112.7	P-1 178.3	P-2 46.1
Distance 1 top	82.9	P-1 157.2	P-2 33.9
Distance 2 bottom	111.9	P-3 186.7	P-4 36.0
Distance 2 top	83.7	P-3 178.8	P-4 15.0
Distance of side face 2 from case for pellet box			
Distance 1 bottom	132.1	P-1 104.3	P-4 127.3
Distance 1 top	101.2	P-1 82.5	P-4 108.8
Distance 2 bottom	129.4	P-2 110.0	P-3 85.6
Distance 2 top	100.3	P-2 68.1	P-3 66.9
Lid for case			
Length	634.0	634.0	Middle
Width	498.6	498.8	Middle
Height	104.1/105.5/105.0	103.8/104.5	Height in P1-4
Diagonal 1 - 3	725.3	724.6	
Diagonal 2 - 4	723.7	724.5	
Groove for flange			
Depth 1 - 2	2.3	2.3	Middle
Depth 1 - 4	2.3	2.3	Middle
Depth 2 - 3	2.3	2.3	Middle
Depth 3 - 4	2.3	2.3	Middle
Width 1 - 2	4.0	4.0	Middle
Width 1 - 4	4.0	4.0	Middle
Width 2 - 3	4.0	4.0	Middle
Width 3 - 4	4.0	4.0	Middle
Edge 1 - 2	23.0	23.0	Middle - outside
Edge 1 - 4	22.8	22.8	Middle - outside
Edge 2 - 3	22.7	22.7	Middle - outside
Edge 3 - 4	23.0	23.0	Middle - outside
Protective lid			
Length	462.0	460.5	Middle
Width	438.1	436.7	Middle
Height	50.3/50.5/50.3/51.2	50.4/50.5/50.5	With lug
Diagonal 1 - 3	633.7	633.7	
Diagonal 2 - 4	633.6	632.5	

Figure 7: Results of Test Sample 4 as Shown in the Testing Report

*test sample 4*ANFG-11.119 (003E)  
Rev. 000  
Appendix 5  
Page 2 of 5

	Actual dimensions		Comment
	Before tests	After tests	
<b>Counter-face to side face 2</b>			
Length, bottom	699.7	699.5	
Length, top	700.8	675.7	
<b>Diagonal struts, bottom</b>			
Distance 1 from standing surface	199.0	200.4	
Distance 2 from standing surface	198.5	200.5	
Distance 3 from standing surface	200.7	202.1	
Distance 4 from standing surface	199.3	87.3	Foot kinked
<b>Diagonal 1 - 3</b>			
Top	971.5	981.0	
Bottom (height cross-tubes)	975.7	989.4	
<b>Diagonal 2 - 4</b>			
Top	978.0	961.4	
Bottom (height cross-tubes)	975.2	982.9	Foot kinked
<b>Case for pellet box with lid for case</b>			
Height			
Corner 1 (no.)	314.0	*312.7	*without weld
Corner 2	314.7	*312.6	*without weld
Corner 3	313.7	*312.2	*without weld
Corner 4	312.4	*312.2	*without weld
<b>Side face 1</b>			
Length, bottom	440.8	440.8	
Length, top	498.5	498.6	
<b>Side face 2</b>			
Length, bottom	475.4	475.6	
Length, top	533.6	533.1	
<b>Counter-face to side face 1</b>			
Length, bottom	439.9	439.7	
Length, top	499.0	498.4	

*test sample 4*ANFG-11.119 (003E)  
Rev. 000  
Appendix 5  
Page 4 of 5

	Actual dimensions		Comment
	Before tests	After tests	
<b>Distance of side face 1 from case for pellet box</b>			
Distance 1 bottom	112.4	130.1	
Distance 1 top	82.3	76.3	
Distance 2 bottom	113.2	*72.5	Inside + tube
Distance 2 top	84.6	*63.2	Inside + tube
<b>Distance of side face 2 from case for pellet box</b>			
Distance 1 bottom	130.8	*109.4	Inside + tube
Distance 1 top	101.9	*102.2	Inside + tube
Distance 2 bottom	130.4	*148.7	Inside + tube
Distance 2 top	100.6	89.0	
<b>Lid for case</b>			
Length	533.6	533.6	Middle
Width	498.3	498.3	Middle
Height	105.0/105.0/104.9/	104.4/104.5/	Height in P1-4
	105.1	104.0	
Diagonal 1 - 3	721.3	723.6	
Diagonal 2 - 4	723.7	723.8	
<b>Groove for flange</b>			
Depth 1 - 2	2.4	2.4	Middle
Depth 1 - 4	2.4	2.4	Middle
Depth 2 - 3	2.4	2.4	Middle
Depth 3 - 4	2.3	2.3	Middle
Width 1 - 2	4.0	4.0	Middle
Width 1 - 4	4.0	4.0	Middle
Width 2 - 3	4.0	4.0	Middle
Width 3 - 4	3.9	3.9	Middle
Edge 1 - 2	23.1	23.1	Middle - outside
Edge 1 - 4	23.1	23.1	Middle - outside
Edge 2 - 3	23.1	23.1	Middle - outside
Edge 3 - 4	22.9	22.9	Middle - outside
<b>Protective lid</b>			
Length	462.0	460.3	Middle
Width	438.2	438.6	Middle
Height	49.8/50.0/49.8/49.8	50.0/51.1/50.0/	With lug
		51.0	
Diagonal 1 - 3	633.6	632.7	
Diagonal 2 - 4	633.7	634.0	