15-6489
Job #

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by **Mason Manufacturing, LLC., 1645 North Railroad Avenue, Decatur, Illinois, 62526, USA**
(Name and address of Manufacturer)

2. Manufactured for **AMG, 1497 Shoup Mill Rd, Dayton, Ohio, 45414, USA**
(Name and address of Purchaser)

3. Location of installation **Virdia, 1319 Hwy 182, Raceland, Louisiana, 70395, USA**
(Name and address)

4. Type **Vertical** (Horizontal, vertical, or sphere) | **Heat Exchanger** (Tank, separator, jkt. vessel, heat exch., etc.) | **15-6489** (Manufacturer's serial number)

N/A (CRN) | **15-6489 rev 1** (Drawing number) | **2269** (National Board number) | **2015** (Year built)

5. ASME Code, Section VIII, Div. 1 **2013/ N/A** [Edition and Addenda, if applicable (date)] | **N/A** (Code Case Number) | **N/A** [Special Service per UG-120(d)]

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multichamber vessels.

6. Shell: (a) Number of course(s) **1** (b) Overall length **9' 9.875"**

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	36" ID	9' 9.875"	SA516-70	.375	.0625	1	none	70	1	none	70	N/A	N/A

Body Flanges on Shells

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

7. Heads: (a) **N/A** (Material spec. number, grade or type) (H.T. - time and temp.) (b) **N/A** (Material spec. number, grade or type) (H.T. - time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
(b)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A

Body Flanges on Heads

	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
(a)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A

8. Type of jacket **N/A** Jacket closure **N/A** (Describe as ogee & weld, bar, etc.)

If bar, give dimensions **N/A** If bolted, describe or sketch.

9. MAWP **50 psi** (Internal) **15 psi** (External) at max. temp. **200 °F** (Internal) **200 °F** (External) Min. design metal temp. **-20 °F** at **50 psi**

10. Impact test **No, exempt per UHA-51(d), UCS-66(c), and UG-20(f)** [Indicate yes or no and the component(s) impact tested] at test temperature of **N/A**

11. Hydro., pneu., or comb. test pressure **Hydro at 65 psi** Proof test **N/A**

Items 12 and 13 to be completed for tube sections.

12. Tubesheet **SA240-316/L** [Stationary (material spec. no.)] | **3.5" x 5"** [Diameter (subject to press.)] | **1.25** (Nominal thickness) | **0** (Corr. allow.) | **welded** Attachment (welded or bolted)

N/A [Floating (material spec. no.)] | **N/A** (Diameter) | **N/A** (Nominal thickness) | **N/A** (Corr. allow.) | **N/A** (Attachment)

13. Tubes **SA249-316/L** (Material spec. no., grade or type) | **.75** (O. D.) | **16 BWG** (Nominal thickness) | **1176 / 1** (Number) | **straight** [Type (Straight or U)]

FORM U1-(Cont'd)

NB Number 2269

Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: (a) No. of course(s) **2** (b) Overall length **5' 5"**

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	3" ID	3' 2"	SA240-316/L	.25	0	1	none	70	1	none	70	N/A	N/A
1	3" ID	2' 3"	SA240-316/L	.25	0	1	none	70	1	none	70	N/A	N/A

Body Flanges on Shells

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
2	RFSO	36.625"	41.5"	2	2	SA105 w/ SA240-316/L Facer	welded	Ends	72 - .75x6.5	SA193-B7, SA194-2H	1.469, .813, .177	F436 Wrought

15. Heads: (a) **SA240-316/L** (Material spec. number, grade or type) (H.T. - time and temp.) (b) **SA240-316/L** (Material spec. number, grade or type) (H.T. - time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	TOP	.1875	0	3"	2.16	N/A	N/A	N/A	N/A	X	X	1	None	70
(b)	BOTTOM	.1875	0	3"	2.16	N/A	N/A	N/A	N/A	X	X	1	None	70

Body Flanges on Heads

	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

16. MAWP **15 psi** (Internal) **15 psi** (External) at max. temp. **200 °F** (Internal) **200 °F** (External) Min. design metal temp. **-20 °F** at **15 psi**.

17. Impact test **No, exempt per UHA-51(d), UCS-66(c), UG-20(f)** at test temperature of **N/A**.
[Indicate yes or no and the component(s) impact tested]

18. Hydro., pneu., or comb. test pressure **Hydro. at 20 psi** Proof test **N/A**

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Steam Inlet	1	26	RFSO	SA240-316/L	SA105 w/SA240-316/L Facer	.25	0		welded	weled	Channel
Condensate Outlet	1	16	RFSO	SA312-316/L	SA105 w/SA240-316/L Facer	.188	0		welded	welded	Channel
Water Inlet	1	12	RFSO	SA106B	SA105	.375	.0625		welded	welded	Shell
Water Outlet	1	12	RFSO	SA106B	SA105	.375	.0625		welded	welded	Shell

20. Supports: Skirt **no** (Yes or no) Lugs **3** (Number) Legs **N/A** (Number) Others **Supports** (Describe) Attached **Shell, welded** (Where and how)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report (list the name of part, item number, Manufacturer's name, and identifying number):

N/A

22. Remarks

Length of tubes: 9' 11.875"
Safety devices designed and installed by others. Not for lethal service. Lugs consist of two trunions and one tail lug.

Form U-5 Attached....

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number **25713** Expires **January 10, 2017**

Date 09/17/2015 Name **Mason Manufacturing, LLC.** (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by

Arise, of Brecksville, OH

have inspected the pressure vessel described in this Manufacturer's Data Report on **September 17, 2015**, and state that,

to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 09/17/2015 Signed (Authorized Inspector) Commissions: **14269A, IL2222** [National Board (incl. endorsements)]

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements made in this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number _____ Expires _____

Date _____ Name _____ (Assembler) Signed _____ (Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and employed by

_____,

have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ (Authorized Inspector) Commission _____ [National Board (incl. endorsements)]

FORM U-5 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET

SHELL-AND-TUBE HEAT EXCHANGERS

As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by **Mason Manufacturing, LLC., 1645 North Railroad Avenue, Decatur, Illinois, 62526, USA**
(Name and address of Manufacturer)

2. Manufactured for **AMG, 1497 Shoup Mill Rd, Dayton, Ohio, 45414, USA**
(Name and address of Purchaser)

3. Location of Installation **Virdia, 1319 Hwy 182, Raceland, Louisiana, 70395, USA**
(Name and address)

4. Type **Vertical** (Horizontal, vertical, or sphere) **15-6489** (Manufacturer's serial number) **N/A** (CRN)

15-6489 rev 1 (drawing no.) **2269** (National Board number) **2015** (Year built)

FIXED TUBESHEET HEAT EXCHANGERS

Name of Condition	Design/Operating Pressure Ranges				Design/Operating Metal Temperature				Allowable Axial Differential Thermal Expansion Range	
	Shell Side		Tube Side		Shell	Channel	Tubes	Tubesheet		
	Min.	Max.	Min.	Max.					Min.	Max.
	units:	units:	units:	units:	units:	units:	units:	units:	units:	units:
Design	**-15**	**50**	**-15**	**15**	**200**	**200**	**200**	**200**	**0**	**N/A**
Operating	**N/A**	**N/A**	**N/A**	**N/A**	**100**	**N/A**	**123**	**N/A**	**0**	**0.031**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Data Report Item Number	Remarks

Axial Differential Thermal Expansion Range: 0.031" means the unit will be experiencing tensile forces at operating mean metal temperatures.

Certificate of Authorization: Type **"U"** No. **25713** Expires **January 10, 2017**

Date **09/17/2015** Name **Mason Manufacturing, LLC.** (Manufacturer) Signed (Representative)

Date **09/17/2015** Signed (Authorized Inspector) Commissions: 14269A, IL2222 (National Board Authorized Inspector Commission number)

15-6489
Job #

FORM R-1 REPORT OF REPAIR

in accordance with the provisions of the *National Board Inspection Code*

1. Work performed by **Mason Manufacturing, LLC.** (name of repair organization) **82** (Form Registration No.)
1645 North Railroad Avenue, Decatur, Illinois, 62526, USA (address) **15-6489** (Po No.,Job No.,etc.)

2. Owner **AMG, Inc** (name)
1497 Shoup Mill Rd, Dayton, Ohio, 45414, USA (address)

3. Location of installation **Virdia** (name)
1319 Hwy 182, Raceland, Louisiana, 70394, USA (address)

4. Item identification **Heat Exchanger** (boiler, pressure vessel or piping) Name of original manufacturer **Mason Mfg, LLC**

5. Identifying nos.: **15-6489** (mfg. serial no.) **2269** (National Board No.) **N/A** (Jurisdiction No.) **N/A** (other) **2015** (year built)

6. NBIC Edition / Addenda: **2013** (edition) **N/A** (addenda)
Original Code of Construction for Item: **ASME Sect. VIII, Div. 1** (name/ section/ division) **UNKNOWN** (edition/ addenda)
Construction Code Used for Repair Performed: **ASME Sect. VIII, Div. 1** (name/ section/ division) **2013/** (edition/ addenda)

7. Repair Type: ☑ Welded ☐ Graphite Pressure Equipment ☐ FRP Pressure Equipment

8. Description of work: ☐ Form R4 Supplemental Sheet is attached ☐ FFSA Form (NB-403) is attached
Attach name plate bracket to shell. WPS FC8-1.

N/A Pressure Test, if applied **psi** MAWP **50 psi**

9. Replacement Parts. Attached are Manufacturer's Partial Data Reports or Form R-3s properly completed for the following items of this report:
N/A
(name of part, item number, data report type or Certificate of Compliance, mfg. name, and identifying stamp)

10. Remarks: **** REPAIR OF ROUTINE NATURE--DOES NOT REQUIRE INSPECTION BY AUTHORIZED INSPECTOR ****
Routine Repair, PT Repair. WPS S8-1

CERTIFICATE OF COMPLIANCE

I, **Michael Walters**, certify that to the best of my knowledge and belief the statements in this report are correct and that all material, construction, and workmanship on this Repair conforms to the *National Board Inspection Code.*
National Board "R" Certificate of Authorization No. **2458** expires on **January 10, 2017**,
Date **09/03/2015**, **Mason Manufacturing, LLC.** (name of repair organization) Signed (authorized representative)

CERTIFICATE OF INSPECTION

I, **Timothy McBee**, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency, where required, issued by the Jurisdiction of **IL** and employed by **Arise** of **Brecksville, OH** have inspected the work described in this report on **September 3, 2015** and state that to the best of my knowledge and belief this work complies with the applicable requirements of the *National Board Inspection Code.*
By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection.

Date **September 3, 2015** Signed (inspector) Commissions **14269, IL2222** (National Board and Jurisdiction No.)