

Form 5500 Department of the Treasury Internal Revenue Service Department of Labor Employee Benefits Security Administration Pension Benefit Guaranty Corporation	Annual Return/Report of Employee Benefit Plan This form is required to be filed for employee benefit plans under sections 104 and 4065 of the Employee Retirement Income Security Act of 1974 (ERISA) and sections 6057(b) and 6058(a) of the Internal Revenue Code (the Code). <p style="text-align: center;">▶ Complete all entries in accordance with the instructions to the Form 5500.</p>	OMB Nos. 1210-0110 1210-0089 <div style="text-align: center; font-size: 1.5em; font-weight: bold;">2017</div> This Form is Open to Public Inspection
---	---	--

Part I	Annual Report Identification Information
For calendar plan year 2017 or fiscal plan year beginning <u>10/01/2017</u> and ending <u>09/30/2018</u>	
A	This return/report is for: <div style="display: flex; justify-content: space-between;"> <div> ☐ a multiemployer plan </div> <div> ☐ a multiple-employer plan (Filers checking this box must attach a list of participating employer information in accordance with the form instructions.) </div> </div>
	☒ a single-employer plan <div style="margin-left: 150px;">☐ a DFE (specify) _____</div>
B	This return/report is: <div style="display: flex; justify-content: space-between;"> <div> ☐ the first return/report ☐ an amended return/report </div> <div> ☐ the final return/report ☐ a short plan year return/report (less than 12 months) </div> </div>
C	If the plan is a collectively-bargained plan, check here. ▶ ☐
D	Check box if filing under: <div style="display: flex; justify-content: space-between;"> <div> ☐ Form 5558 ☐ special extension (enter description) </div> <div> ☐ automatic extension </div> <div> ☒ the DFVC program </div> </div>

Part II	Basic Plan Information—enter all requested information						
1a	Name of plan <u>ASHLAND HERCULES PENSION PLAN</u>						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">1b</td> <td>Three-digit plan number (PN) ▶ <u>001</u></td> </tr> <tr> <td>1c</td> <td>Effective date of plan <u>01/01/1913</u></td> </tr> </table>	1b	Three-digit plan number (PN) ▶ <u>001</u>	1c	Effective date of plan <u>01/01/1913</u>		
1b	Three-digit plan number (PN) ▶ <u>001</u>						
1c	Effective date of plan <u>01/01/1913</u>						
2a	Plan sponsor's name (employer, if for a single-employer plan) Mailing address (include room, apt., suite no. and street, or P.O. Box) City or town, state or province, country, and ZIP or foreign postal code (if foreign, see instructions) <u>VALVOLINE LLC</u> <u>100 VALVOLINE WAY</u> <u>LEXINGTON, KY 40509-2714</u>						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2b</td> <td>Employer Identification Number (EIN) <u>61-1782197</u></td> </tr> <tr> <td>2c</td> <td>Plan Sponsor's telephone number <u>859-357-7777</u></td> </tr> <tr> <td>2d</td> <td>Business code (see instructions) <u>325600</u></td> </tr> </table>	2b	Employer Identification Number (EIN) <u>61-1782197</u>	2c	Plan Sponsor's telephone number <u>859-357-7777</u>	2d	Business code (see instructions) <u>325600</u>
2b	Employer Identification Number (EIN) <u>61-1782197</u>						
2c	Plan Sponsor's telephone number <u>859-357-7777</u>						
2d	Business code (see instructions) <u>325600</u>						

Caution: A penalty for the late or incomplete filing of this return/report will be assessed unless reasonable cause is established.

Under penalties of perjury and other penalties set forth in the instructions, I declare that I have examined this return/report, including accompanying schedules, statements and attachments, as well as the electronic version of this return/report, and to the best of my knowledge and belief, it is true, correct, and complete.

SIGN HERE	Filed with authorized/valid electronic signature.	07/08/2019	EIVIND KOLEMAINEN
	Signature of plan administrator	Date	Enter name of individual signing as plan administrator
SIGN HERE			
	Signature of employer/plan sponsor	Date	Enter name of individual signing as employer or plan sponsor
SIGN HERE			
	Signature of DFE	Date	Enter name of individual signing as DFE

For Paperwork Reduction Act Notice, see the Instructions for Form 5500.

Form 5500 (2017)
v. 170203

3a Plan administrator's name and address ☒ Same as Plan Sponsor	3b Administrator's EIN 3c Administrator's telephone number <div style="background-color: #cccccc; height: 40px; width: 100%;"></div>
4 If the name and/or EIN of the plan sponsor or the plan name has changed since the last return/report filed for this plan, enter the plan sponsor's name, EIN, the plan name and the plan number from the last return/report: a Sponsor's name c Plan Name	4b EIN 4d PN
5 Total number of participants at the beginning of the plan year	5 15192
6 Number of participants as of the end of the plan year unless otherwise stated (welfare plans complete only lines 6a(1) , 6a(2) , 6b , 6c , and 6d).	
a(1) Total number of active participants at the beginning of the plan year	6a(1) 906
a(2) Total number of active participants at the end of the plan year	6a(2) 877
b Retired or separated participants receiving benefits	6b 5137
c Other retired or separated participants entitled to future benefits	6c 6132
d Subtotal. Add lines 6a(2) , 6b , and 6c	6d 12146
e Deceased participants whose beneficiaries are receiving or are entitled to receive benefits.	6e 1110
f Total. Add lines 6d and 6e	6f 13256
g Number of participants with account balances as of the end of the plan year (only defined contribution plans complete this item)	6g 0
h Number of participants who terminated employment during the plan year with accrued benefits that were less than 100% vested	6h 0
7 Enter the total number of employers obligated to contribute to the plan (only multiemployer plans complete this item).....	7

8a If the plan provides pension benefits, enter the applicable pension feature codes from the List of Plan Characteristics Codes in the instructions:

1A 3H 1I

b If the plan provides welfare benefits, enter the applicable welfare feature codes from the List of Plan Characteristics Codes in the instructions:

9a Plan funding arrangement (check all that apply) (1) ☐ Insurance (2) ☐ Code section 412(e)(3) insurance contracts (3) ☒ Trust (4) ☐ General assets of the sponsor	9b Plan benefit arrangement (check all that apply) (1) ☒ Insurance (2) ☐ Code section 412(e)(3) insurance contracts (3) ☒ Trust (4) ☐ General assets of the sponsor
---	--

10 Check all applicable boxes in 10a and 10b to indicate which schedules are attached, and, where indicated, enter the number attached. (See instructions)

a Pension Schedules

- (1)** ☒ **R** (Retirement Plan Information)
- (2)** ☐ **MB** (Multiemployer Defined Benefit Plan and Certain Money Purchase Plan Actuarial Information) - signed by the plan actuary
- (3)** ☒ **SB** (Single-Employer Defined Benefit Plan Actuarial Information) - signed by the plan actuary

b General Schedules

- (1)** ☒ **H** (Financial Information)
- (2)** ☐ **I** (Financial Information – Small Plan)
- (3)** ☐ 0 **A** (Insurance Information)
- (4)** ☒ **C** (Service Provider Information)
- (5)** ☒ **D** (DFE/Participating Plan Information)
- (6)** ☐ **G** (Financial Transaction Schedules)

Part III Form M-1 Compliance Information (to be completed by welfare benefit plans)

11a If the plan provides welfare benefits, was the plan subject to the Form M-1 filing requirements during the plan year? (See instructions and 29 CFR 2520.101-2.) ☐ Yes ☐ No

If "Yes" is checked, complete lines 11b and 11c.

11b Is the plan currently in compliance with the Form M-1 filing requirements? (See instructions and 29 CFR 2520.101-2.) ☐ Yes ☐ No

11c Enter the Receipt Confirmation Code for the 2017 Form M-1 annual report. If the plan was not required to file the 2017 Form M-1 annual report, enter the Receipt Confirmation Code for the most recent Form M-1 that was required to be filed under the Form M-1 filing requirements. (Failure to enter a valid Receipt Confirmation Code will subject the Form 5500 filing to rejection as incomplete.)

Receipt Confirmation Code _____

<div>SCHEDULE SB (Form 5500) Department of the Treasury Internal Revenue Service Department of Labor Employee Benefits Security Administration Pension Benefit Guaranty Corporation</div>	<div>Single-Employer Defined Benefit Plan Actuarial Information</div> <div>This schedule is required to be filed under section 104 of the Employee Retirement Income Security Act of 1974 (ERISA) and section 6059 of the Internal Revenue Code (the Code).</div> <div>File as an attachment to Form 5500 or 5500-SF.</div>	<div>OMB No. 1210-0110</div> <div>2017</div> <div>This Form is Open to Public Inspection</div>
--	---	--

For calendar plan year 2017 or fiscal plan year beginning 10/01/2017 and ending 09/30/2018

Round off amounts to nearest dollar.
Caution: A penalty of \$1,000 will be assessed for late filing of this report unless reasonable cause is established.

A Name of plan ASHLAND HERCULES PENSION PLAN	B Three-digit plan number (PN) 001
C Plan sponsor's name as shown on line 2a of Form 5500 or 5500-SF VALVOLINE LLC	D Employer Identification Number (EIN) 61-1782197

E Type of plan: ☒ Single ☐ Multiple-A ☐ Multiple-B	F Prior year plan size: ☐ 100 or fewer ☐ 101-500 ☒ More than 500
--	--

Part I Basic Information			
1 Enter the valuation date: Month 10 Day 01 Year 2017			
2 Assets:			
a Market value	2a	2023394965	
b Actuarial value	2b	1979188341	
3 Funding target/participant count breakdown	(1) Number of participants	(2) Vested Funding Target	(3) Total Funding Target
a For retired participants and beneficiaries receiving payment	5327	1155282289	1155282289
b For terminated vested participants	10387	496382296	496382296
c For active participants	906	83649193	86954103
d Total	16620	1735313778	1738618688
4 If the plan is in at-risk status, check the box and complete lines (a) and (b):			
a Funding target disregarding prescribed at-risk assumptions	4a		
b Funding target reflecting at-risk assumptions, but disregarding transition rule for plans that have been in at-risk status for fewer than five consecutive years and disregarding loading factor	4b		
5 Effective interest rate	5	5.82 %	
6 Target normal cost	6	7263433	

Statement by Enrolled Actuary
To the best of my knowledge, the information supplied in this schedule and accompanying schedules, statements and attachments, if any, is complete and accurate. Each prescribed assumption was applied in accordance with applicable law and regulations. In my opinion, each other assumption is reasonable (taking into account the experience of the plan and reasonable expectations) and such other assumptions, in combination, offer my best estimate of anticipated experience under the plan.

<div>SIGN HERE</div>	<div>06/26/2019</div> <div>Date</div> <div>17-03271</div> <div>Most recent enrollment number</div> <div>502-561-4500</div> <div>Telephone number (including area code)</div>
<div>DENNIS L STONE, FSA</div> <div>Type or print name of actuary</div>	
<div>MERCER</div> <div>Firm name</div>	
<div>400 WEST MARKET STREET LOUISVILLE, KY 40202-3415</div> <div>Address of the firm</div>	

If the actuary has not fully reflected any regulation or ruling promulgated under the statute in completing this schedule, check the box and see instructions

Part II Beginning of Year Carryover and Prefunding Balances

	(a) Carryover balance	(b) Prefunding balance
7 Balance at beginning of prior year after applicable adjustments (line 13 from prior year)	0	425692111
8 Portion elected for use to offset prior year's funding requirement (line 35 from prior year)		55420749
9 Amount remaining (line 7 minus line 8)	0	370271362
10 Interest on line 9 using prior year's actual return of <u>7.35</u> %	0	27214946
11 Prior year's excess contributions to be added to prefunding balance:		
a Present value of excess contributions (line 38a from prior year)		341780298
b(1) Interest on the excess, if any, of line 38a over line 38b from prior year Schedule SB, using prior year's effective interest rate of <u>5.98</u> %		17124301
b(2) Interest on line 38b from prior year Schedule SB, using prior year's actual return		4073425
c Total available at beginning of current plan year to add to prefunding balance		362978024
d Portion of (c) to be added to prefunding balance		362978024
12 Other reductions in balances due to elections or deemed elections		190000000
13 Balance at beginning of current year (line 9 + line 10 + line 11d – line 12)	0	570464332

Part III Funding Percentages

14 Funding target attainment percentage	14	81.02%
15 Adjusted funding target attainment percentage	15	108.93%
16 Prior year's funding percentage for purposes of determining whether carryover/prefunding balances may be used to reduce current year's funding requirement	16	82.27%
17 If the current value of the assets of the plan is less than 70 percent of the funding target, enter such percentage.	17	%

Part IV Contributions and Liquidity Shortfalls**18** Contributions made to the plan for the plan year by employer(s) and employees:

(a) Date (MM-DD-YYYY)	(b) Amount paid by employer(s)	(c) Amount paid by employees	(a) Date (MM-DD-YYYY)	(b) Amount paid by employer(s)	(c) Amount paid by employees
Totals ▶			18(b)	0	18(c) 0

19 Discounted employer contributions – see instructions for small plan with a valuation date after the beginning of the year:

a Contributions allocated toward unpaid minimum required contributions from prior years.	19a	0
b Contributions made to avoid restrictions adjusted to valuation date	19b	0
c Contributions allocated toward minimum required contribution for current year adjusted to valuation date	19c	0

20 Quarterly contributions and liquidity shortfalls:

- a** Did the plan have a "funding shortfall" for the prior year? ☒ Yes ☐ No
- b** If line 20a is "Yes," were required quarterly installments for the current year made in a timely manner? ☒ Yes ☐ No
- c** If line 20a is "Yes," see instructions and complete the following table as applicable:

Liquidity shortfall as of end of quarter of this plan year			
(1) 1st	(2) 2nd	(3) 3rd	(4) 4th
0	0	0	0

Part V Assumptions Used to Determine Funding Target and Target Normal Cost

21 Discount rate:				
a Segment rates:	1st segment: 4.16 %	2nd segment: 5.72 %	3rd segment: 6.48 %	☐ N/A, full yield curve used
b Applicable month (enter code)				21b 4
22 Weighted average retirement age.....				22 62
23 Mortality table(s) (see instructions)	☐ Prescribed - combined	☒ Prescribed - separate	☐ Substitute	

Part VI Miscellaneous Items

24 Has a change been made in the non-prescribed actuarial assumptions for the current plan year? If "Yes," see instructions regarding required attachment	☒ Yes ☐ No
25 Has a method change been made for the current plan year? If "Yes," see instructions regarding required attachment.....	☐ Yes ☒ No
26 Is the plan required to provide a Schedule of Active Participants? If "Yes," see instructions regarding required attachment.....	☒ Yes ☐ No
27 If the plan is subject to alternative funding rules, enter applicable code and see instructions regarding attachment	27

Part VII Reconciliation of Unpaid Minimum Required Contributions For Prior Years

28 Unpaid minimum required contributions for all prior years	28	0
29 Discounted employer contributions allocated toward unpaid minimum required contributions from prior years (line 19a)	29	0
30 Remaining amount of unpaid minimum required contributions (line 28 minus line 29)	30	0

Part VIII Minimum Required Contribution For Current Year

31 Target normal cost and excess assets (see instructions):			
a Target normal cost (line 6)	31a	7263433	
b Excess assets, if applicable, but not greater than line 31a	31b	0	
32 Amortization installments:	Outstanding Balance	Installment	
a Net shortfall amortization installment.....	329894679	71159933	
b Waiver amortization installment		0	
33 If a waiver has been approved for this plan year, enter the date of the ruling letter granting the approval (Month _____ Day _____ Year _____) and the waived amount	33		
34 Total funding requirement before reflecting carryover/prefunding balances (lines 31a - 31b + 32a + 32b - 33).....	34	78423366	
	Carryover balance	Prefunding balance	Total balance
35 Balances elected for use to offset funding requirement.....		78513404	78513404
36 Additional cash requirement (line 34 minus line 35)	36	0	
37 Contributions allocated toward minimum required contribution for current year adjusted to valuation date (line 19c)	37	0	
38 Present value of excess contributions for current year (see instructions)			
a Total (excess, if any, of line 37 over line 36)	38a	0	
b Portion included in line 38a attributable to use of prefunding and funding standard carryover balances	38b		
39 Unpaid minimum required contribution for current year (excess, if any, of line 36 over line 37)	39	0	
40 Unpaid minimum required contributions for all years.....	40	0	

Part IX Pension Funding Relief Under Pension Relief Act of 2010 (See Instructions)

41 If an election was made to use PRA 2010 funding relief for this plan:			
a Schedule elected	☐ 2 plus 7 years	☐ 15 years	
b Eligible plan year(s) for which the election in line 41a was made	☐ 2008	☐ 2009	☐ 2010 ☐ 2011
42 Amount of acceleration adjustment	42		
43 Excess installment acceleration amount to be carried over to future plan years	43		

<div>SCHEDULE C</div> <div>(Form 5500)</div> <div>Department of the Treasury Internal Revenue Service</div> <div>Department of Labor Employee Benefits Security Administration</div> <div>Pension Benefit Guaranty Corporation</div>	<div>Service Provider Information</div> <div>This schedule is required to be filed under section 104 of the Employee Retirement Income Security Act of 1974 (ERISA).</div> <div>▶ File as an attachment to Form 5500.</div>	OMB No. 1210-0110
		2017
		This Form is Open to Public Inspection.

For calendar plan year 2017 or fiscal plan year beginning 10/01/2017 and ending 09/30/2018		
A Name of plan ASHLAND HERCULES PENSION PLAN	B Three-digit plan number (PN) ▶	001
C Plan sponsor's name as shown on line 2a of Form 5500 VALVOLINE LLC	D Employer Identification Number (EIN) 61-1782197	

Part I	Service Provider Information (see instructions)
--------	---

You must complete this Part, in accordance with the instructions, to report the information required for **each person** who received, directly or indirectly, \$5,000 or more in total compensation (i.e., money or anything else of monetary value) in connection with services rendered to the plan or the person's position with the plan during the plan year. If a person received **only** eligible indirect compensation for which the plan received the required disclosures, you are required to answer line 1 but are not required to include that person when completing the remainder of this Part.

1 Information on Persons Receiving Only Eligible Indirect Compensation

a Check "Yes" or "No" to indicate whether you are excluding a person from the remainder of this Part because they received only eligible indirect compensation for which the plan received the required disclosures (see instructions for definitions and conditions).. ☒ Yes ☐ No

b If you answered line 1a "Yes," enter the name and EIN or address of each person providing the required disclosures for the service providers who received only eligible indirect compensation. Complete as many entries as needed (see instructions).

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
BASSO INVESTORS LTD	1268 EAST MAIN STREET STAMFORD, CT 06902

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
GOLDMAN SACHS ASSET MANAGEMENT	
13-3575636	

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
TACONIC CAPITAL ADVISORS, L.P.	
20-5826144	

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
CRABEL CAPITAL MANAGEMENT, LLC	
39-1903915	

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

BRIDGEWATER ASSOCIATES, LP

ONE GLENDINNING PLACE
WESTPORT, CT 06680

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

BAIN CAPITAL PUBLIC EQUITY, LP

200 CLARENDON STREET
BOSTON, MA 02116

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

DAVIDSON KEMPNER ADVISERS, INC.

13-3594751

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

DAVIDSON KEMPNER CAPITAL MANAGEMENT

13-3863161

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

ETON PARK CAPITAL MANAGEMENT, LP

11-3719116

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

SILVER CREEK CAPITAL MANAGEMENT LLC

RAINIER SQUARE BLDG.
1301 FIFTH AVE, 40TH FLOOR
SEATTLE, WA 98101

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

FIR TREE INC.

13-3745261

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

FIR TREE , L.L.C.

20-2556936

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

SAMLYN CAPITAL, LLC

20-5854094

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

PORTFOLIO ADVISORS, LLC

06-1487853

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

LUXOR CAPITAL GROUP, LP

20-1394199

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

STEADFAST CAPITAL MANAGEMENT LP

450 PARK AVENUE 21ST FLOOR
NEW YORK, NY 10022

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

MILLENNIUM MANAGEMENT, LLC

666 FIFTH AVENUE
NEW YORK, NY 10103

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

OMEGA ADVISORS, INC.

13-3628307

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

OZ MANAGEMENT LP

13-3980578

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation

2. Information on Other Service Providers Receiving Direct or Indirect Compensation. Except for those persons for whom you answered "Yes" to line 1a above, complete as many entries as needed to list each person receiving, directly or indirectly, \$5,000 or more in total compensation (i.e., money or anything else of value) in connection with services rendered to the plan or their position with the plan during the plan year. (See instructions).

(a) Enter name and EIN or address (see instructions)

BNY MELLON MANAGEMENT NA

25-6078093

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
28 51	NONE	2604436	Yes ☒ No ☐	Yes ☒ No ☐	0	Yes ☐ No ☒

(a) Enter name and EIN or address (see instructions)

TOWERS WATSON DELAWARE

53-0181291

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
15 50 65	NONE	2435310	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

(a) Enter name and EIN or address (see instructions)

WESTERN ASSET MANAGEMENT CO

95-2705767

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
28 51	NONE	1158704	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

2. Information on Other Service Providers Receiving Direct or Indirect Compensation. Except for those persons for whom you answered "Yes" to line 1a above, complete as many entries as needed to list each person receiving, directly or indirectly, \$5,000 or more in total compensation (i.e., money or anything else of value) in connection with services rendered to the plan or their position with the plan during the plan year. (See instructions).

(a) Enter name and EIN or address (see instructions)

PACIFIC INVESTMENT MANAGEMENT CO

33-0629048

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
28 51 52	NONE	1013944	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

(a) Enter name and EIN or address (see instructions)

METLIFE

13-5581829

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
12 50	NONE	780052	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

(a) Enter name and EIN or address (see instructions)

NISA INVESTMENT ADVISORS, L.L.C.

48-1140940

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
28 51	NONE	718338	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

2. Information on Other Service Providers Receiving Direct or Indirect Compensation. Except for those persons for whom you answered "Yes" to line 1a above, complete as many entries as needed to list each person receiving, directly or indirectly, \$5,000 or more in total compensation (i.e., money or anything else of value) in connection with services rendered to the plan or their position with the plan during the plan year. (See instructions).

(a) Enter name and EIN or address (see instructions)

THE BANK OF NEW YORK MELLON

13-5160382

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
18 19 50	NONE	489820	Yes ☒ No ☐	Yes ☒ No ☐	0	Yes ☐ No ☒

(a) Enter name and EIN or address (see instructions)

BLACKROCK INTERNATIONAL LIMITED

06-1543710

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
28 51 52	NONE	428383	Yes ☒ No ☐	Yes ☒ No ☐	0	Yes ☐ No ☒

(a) Enter name and EIN or address (see instructions)

MERCER (US) INC.

13-2834414

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
11 50	NONE	213335	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

2. Information on Other Service Providers Receiving Direct or Indirect Compensation. Except for those persons for whom you answered "Yes" to line 1a above, complete as many entries as needed to list each person receiving, directly or indirectly, \$5,000 or more in total compensation (i.e., money or anything else of value) in connection with services rendered to the plan or their position with the plan during the plan year. (See instructions).

(a) Enter name and EIN or address (see instructions)

ALBOURNE AMERICA LLC

91-2164625

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
16 50	NONE	100000	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

(a) Enter name and EIN or address (see instructions)

BLUE AND COMPANY LLC

35-1178661

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
10 50	NONE	52800	Yes ☐ No ☒	Yes ☐ No ☐		Yes ☐ No ☐

(a) Enter name and EIN or address (see instructions)

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
			Yes ☐ No ☐	Yes ☐ No ☐		Yes ☐ No ☐

Part I Service Provider Information (continued)

3. If you reported on line 2 receipt of indirect compensation, other than eligible indirect compensation, by a service provider, and the service provider is a fiduciary or provides contract administrator, consulting, custodial, investment advisory, investment management, broker, or recordkeeping services, answer the following questions for (a) each source from whom the service provider received \$1,000 or more in indirect compensation and (b) each source for whom the service provider gave you a formula used to determine the indirect compensation instead of an amount or estimated amount of the indirect compensation. Complete as many entries as needed to report the required information for each source.

(a) Enter service provider name as it appears on line 2	(b) Service Codes (see instructions)	(c) Enter amount of indirect compensation
(d) Enter name and EIN (address) of source of indirect compensation	(e) Describe the indirect compensation, including any formula used to determine the service provider's eligibility for or the amount of the indirect compensation.	
(a) Enter service provider name as it appears on line 2	(b) Service Codes (see instructions)	(c) Enter amount of indirect compensation
(d) Enter name and EIN (address) of source of indirect compensation	(e) Describe the indirect compensation, including any formula used to determine the service provider's eligibility for or the amount of the indirect compensation.	
(a) Enter service provider name as it appears on line 2	(b) Service Codes (see instructions)	(c) Enter amount of indirect compensation
(d) Enter name and EIN (address) of source of indirect compensation	(e) Describe the indirect compensation, including any formula used to determine the service provider's eligibility for or the amount of the indirect compensation.	

4 Provide, to the extent possible, the following information for each service provider who failed or refused to provide the information necessary to complete this Schedule.

(a) Enter name and EIN or address of service provider (see instructions)	(b) Nature of Service Code(s)	(c) Describe the information that the service provider failed or refused to provide
(a) Enter name and EIN or address of service provider (see instructions)	(b) Nature of Service Code(s)	(c) Describe the information that the service provider failed or refused to provide
(a) Enter name and EIN or address of service provider (see instructions)	(b) Nature of Service Code(s)	(c) Describe the information that the service provider failed or refused to provide
(a) Enter name and EIN or address of service provider (see instructions)	(b) Nature of Service Code(s)	(c) Describe the information that the service provider failed or refused to provide
(a) Enter name and EIN or address of service provider (see instructions)	(b) Nature of Service Code(s)	(c) Describe the information that the service provider failed or refused to provide
(a) Enter name and EIN or address of service provider (see instructions)	(b) Nature of Service Code(s)	(c) Describe the information that the service provider failed or refused to provide

Part III Termination Information on Accountants and Enrolled Actuaries (see instructions)
(complete as many entries as needed)

a Name:	b EIN:
c Position:	
d Address:	e Telephone:

Explanation:

a Name:	b EIN:
c Position:	
d Address:	e Telephone:

Explanation:

a Name:	b EIN:
c Position:	
d Address:	e Telephone:

Explanation:

a Name:	b EIN:
c Position:	
d Address:	e Telephone:

Explanation:

a Name:	b EIN:
c Position:	
d Address:	e Telephone:

Explanation:

<div>SCHEDULE D (Form 5500) Department of the Treasury Internal Revenue Service Department of Labor Employee Benefits Security Administration</div>		<div>DFE/Participating Plan Information</div> <div>This schedule is required to be filed under section 104 of the Employee Retirement Income Security Act of 1974 (ERISA).</div> <div>▶ File as an attachment to Form 5500.</div>		<div>OMB No. 1210-0110</div> <div>2017</div> <div>This Form is Open to Public Inspection.</div>	
For calendar plan year 2017 or fiscal plan year beginning 10/01/2017 and ending 09/30/2018					
A Name of plan ASHLAND HERCULES PENSION PLAN			B Three-digit plan number (PN) ▶		001
C Plan or DFE sponsor's name as shown on line 2a of Form 5500 VALVOLINE LLC			D Employer Identification Number (EIN) 61-1782197		
Part I Information on interests in MTIAs, CCTs, PSAs, and 103-12 IEs (to be completed by plans and DFEs) (Complete as many entries as needed to report all interests in DFEs)					
a Name of MTIA, CCT, PSA, or 103-12 IE: VALVOLINE LLC DEFINED BENEFIT TRUST					
b Name of sponsor of entity listed in (a): VALVOLINE LLC					
c EIN-PN 61-1782197-004		d Entity code M	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 1737845564		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)		
a Name of MTIA, CCT, PSA, or 103-12 IE:					
b Name of sponsor of entity listed in (a):					
c EIN-PN		d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see		

a Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)**a** Name of MTIA, CCT, PSA, or 103-12 IE:**b** Name of sponsor of entity listed in (a):**c** EIN-PN**d** Entity
code**e** Dollar value of interest in MTIA, CCT, PSA, or
103-12 IE at end of year (see instructions)

Part II Information on Participating Plans (to be completed by DFEs)

(Complete as many entries as needed to report all participating plans)

a Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN**a** Plan name**b** Name of
plan sponsor**c** EIN-PN

SCHEDULE H (Form 5500) <small>Department of the Treasury Internal Revenue Service</small> <small>Department of Labor Employee Benefits Security Administration</small> <small>Pension Benefit Guaranty Corporation</small>	Financial Information This schedule is required to be filed under section 104 of the Employee Retirement Income Security Act of 1974 (ERISA), and section 6058(a) of the Internal Revenue Code (the Code). ► File as an attachment to Form 5500.	OMB No. 1210-0110 2017 This Form is Open to Public Inspection
--	--	---

For calendar plan year 2017 or fiscal plan year beginning <u>10/01/2017</u> and ending <u>09/30/2018</u>		
A Name of plan <u>ASHLAND HERCULES PENSION PLAN</u>	B Three-digit plan number (PN) ►	<u>001</u>
C Plan sponsor's name as shown on line 2a of Form 5500 <u>VALVOLINE LLC</u>	D Employer Identification Number (EIN) <u>61-1782197</u>	

Part I	Asset and Liability Statement
---------------	--------------------------------------

1 Current value of plan assets and liabilities at the beginning and end of the plan year. Combine the value of plan assets held in more than one trust. Report the value of the plan's interest in a commingled fund containing the assets of more than one plan on a line-by-line basis unless the value is reportable on lines 1c(9) through 1c(14). Do not enter the value of that portion of an insurance contract which guarantees, during this plan year, to pay a specific dollar benefit at a future date. **Round off amounts to the nearest dollar.** MTIAs, CCTs, PSAs, and 103-12 IEs do not complete lines 1b(1), 1b(2), 1c(8), 1g, 1h, and 1i. CCTs, PSAs, and 103-12 IEs also do not complete lines 1d and 1e. See instructions.

Assets		(a) Beginning of Year	(b) End of Year
a Total noninterest-bearing cash	1a		
b Receivables (less allowance for doubtful accounts):			
(1) Employer contributions	1b(1)		
(2) Participant contributions	1b(2)		
(3) Other.....	1b(3)	0	0
c General investments:			
(1) Interest-bearing cash (include money market accounts & certificates of deposit)	1c(1)		
(2) U.S. Government securities.....	1c(2)		
(3) Corporate debt instruments (other than employer securities):			
(A) Preferred	1c(3)(A)		
(B) All other.....	1c(3)(B)		
(4) Corporate stocks (other than employer securities):			
(A) Preferred	1c(4)(A)		
(B) Common	1c(4)(B)		
(5) Partnership/joint venture interests	1c(5)		
(6) Real estate (other than employer real property)	1c(6)		
(7) Loans (other than to participants)	1c(7)		
(8) Participant loans	1c(8)		
(9) Value of interest in common/collective trusts.....	1c(9)		
(10) Value of interest in pooled separate accounts.....	1c(10)		
(11) Value of interest in master trust investment accounts	1c(11)	2026586548	1737845564
(12) Value of interest in 103-12 investment entities	1c(12)		
(13) Value of interest in registered investment companies (e.g., mutual funds).....	1c(13)		
(14) Value of funds held in insurance company general account (unallocated contracts).....	1c(14)		
(15) Other	1c(15)		

		(a) Beginning of Year	(b) End of Year
1d	Employer-related investments:		
(1)	Employer securities	1d(1)	
(2)	Employer real property	1d(2)	
e	Buildings and other property used in plan operation	1e	
f	Total assets (add all amounts in lines 1a through 1e)	1f	2026586548 1737845564
Liabilities			
g	Benefit claims payable	1g	
h	Operating payables	1h	
i	Acquisition indebtedness	1i	
j	Other liabilities	1j	
k	Total liabilities (add all amounts in lines 1g through 1j)	1k	0 0
Net Assets			
l	Net assets (subtract line 1k from line 1f)	1l	2026586548 1737845564

Part II Income and Expense Statement

2 Plan income, expenses, and changes in net assets for the year. Include all income and expenses of the plan, including any trust(s) or separately maintained fund(s) and any payments/receipts to/from insurance carriers. Round off amounts to the nearest dollar. MTIAs, CCTs, PSAs, and 103-12 IEs do not complete lines 2a, 2b(1)(E), 2e, 2f, and 2g.

		(a) Amount	(b) Total
a	Contributions:		
(1)	Received or receivable in cash from: (A) Employers	2a(1)(A)	
	(B) Participants	2a(1)(B)	
	(C) Others (including rollovers)	2a(1)(C)	
(2)	Noncash contributions	2a(2)	
(3)	Total contributions. Add lines 2a(1)(A) , (B) , (C) , and line 2a(2)	2a(3)	0
b	Earnings on investments:		
(1)	Interest:		
	(A) Interest-bearing cash (including money market accounts and certificates of deposit)	2b(1)(A)	
	(B) U.S. Government securities	2b(1)(B)	
	(C) Corporate debt instruments	2b(1)(C)	
	(D) Loans (other than to participants)	2b(1)(D)	
	(E) Participant loans	2b(1)(E)	
	(F) Other	2b(1)(F)	
	(G) Total interest. Add lines 2b(1)(A) through (F)	2b(1)(G)	0
(2)	Dividends: (A) Preferred stock	2b(2)(A)	
	(B) Common stock	2b(2)(B)	
	(C) Registered investment company shares (e.g. mutual funds)	2b(2)(C)	
	(D) Total dividends. Add lines 2b(2)(A) , (B) , and (C)	2b(2)(D)	0
(3)	Rents	2b(3)	
(4)	Net gain (loss) on sale of assets: (A) Aggregate proceeds	2b(4)(A)	
	(B) Aggregate carrying amount (see instructions)	2b(4)(B)	
	(C) Subtract line 2b(4)(B) from line 2b(4)(A) and enter result	2b(4)(C)	0
(5)	Unrealized appreciation (depreciation) of assets: (A) Real estate	2b(5)(A)	
	(B) Other	2b(5)(B)	
	(C) Total unrealized appreciation of assets. Add lines 2b(5)(A) and (B)	2b(5)(C)	0

		(a) Amount	(b) Total
(6) Net investment gain (loss) from common/collective trusts	2b(6)		
(7) Net investment gain (loss) from pooled separate accounts	2b(7)		
(8) Net investment gain (loss) from master trust investment accounts	2b(8)		-24046555
(9) Net investment gain (loss) from 103-12 investment entities	2b(9)		
(10) Net investment gain (loss) from registered investment companies (e.g., mutual funds).....	2b(10)		
c Other income	2c		
d Total income. Add all income amounts in column (b) and enter total.....	2d		-24046555

Expenses

e Benefit payment and payments to provide benefits:			
(1) Directly to participants or beneficiaries, including direct rollovers.....	2e(1)	265052922	
(2) To insurance carriers for the provision of benefits	2e(2)	-1369733	
(3) Other	2e(3)		
(4) Total benefit payments. Add lines 2e(1) through (3).....	2e(4)		263683189
f Corrective distributions (see instructions)	2f		
g Certain deemed distributions of participant loans (see instructions).....	2g		
h Interest expense.....	2h		
i Administrative expenses: (1) Professional fees	2i(1)	266135	
(2) Contract administrator fees	2i(2)		
(3) Investment advisory and management fees	2i(3)		
(4) Other	2i(4)	9212004	
(5) Total administrative expenses. Add lines 2i(1) through (4).....	2i(5)		9478139
j Total expenses. Add all expense amounts in column (b) and enter total.....	2j		273161328

Net Income and Reconciliation

k Net income (loss). Subtract line 2j from line 2d	2k		-297207883
l Transfers of assets:			
(1) To this plan.....	2l(1)		8466899
(2) From this plan	2l(2)		

Part III Accountant's Opinion

3 Complete lines 3a through 3c if the opinion of an independent qualified public accountant is attached to this Form 5500. Complete line 3d if an opinion is not attached.

a The attached opinion of an independent qualified public accountant for this plan is (see instructions):

(1) ☐ Unqualified (2) ☐ Qualified (3) ☒ Disclaimer (4) ☐ Adverse

b Did the accountant perform a limited scope audit pursuant to 29 CFR 2520.103-8 and/or 103-12(d)?

☒ Yes ☐ No

c Enter the name and EIN of the accountant (or accounting firm) below:

(1) Name: BLUE AND COMPANY, LLC

(2) EIN: 35-1178661

d The opinion of an independent qualified public accountant is **not attached** because:

(1) ☐ This form is filed for a CCT, PSA, or MTIA. (2) ☐ It will be attached to the next Form 5500 pursuant to 29 CFR 2520.104-50.

Part IV Compliance Questions

4 CCTs and PSAs do not complete Part IV. MTIAs, 103-12 IEs, and GIAs do not complete lines 4a, 4e, 4f, 4g, 4h, 4k, 4m, 4n, or 5. 103-12 IEs also do not complete lines 4j and 4l. MTIAs also do not complete line 4l.

During the plan year:

a Was there a failure to transmit to the plan any participant contributions within the time period described in 29 CFR 2510.3-102? Continue to answer "Yes" for any prior year failures until fully corrected. (See instructions and DOL's Voluntary Fiduciary Correction Program.).....

b Were any loans by the plan or fixed income obligations due the plan in default as of the close of the plan year or classified during the year as uncollectible? Disregard participant loans secured by participant's account balance. (Attach Schedule G (Form 5500) Part I if "Yes" is checked.)

	Yes	No	Amount
4a		X	
4b		X	

	Yes	No	Amount
c Were any leases to which the plan was a party in default or classified during the year as uncollectible? (Attach Schedule G (Form 5500) Part II if "Yes" is checked.)		X	
d Were there any nonexempt transactions with any party-in-interest? (Do not include transactions reported on line 4a. Attach Schedule G (Form 5500) Part III if "Yes" is checked.)		X	
e Was this plan covered by a fidelity bond?	X		10000000
f Did the plan have a loss, whether or not reimbursed by the plan's fidelity bond, that was caused by fraud or dishonesty?		X	
g Did the plan hold any assets whose current value was neither readily determinable on an established market nor set by an independent third party appraiser?		X	
h Did the plan receive any noncash contributions whose value was neither readily determinable on an established market nor set by an independent third party appraiser?		X	
i Did the plan have assets held for investment? (Attach schedule(s) of assets if "Yes" is checked, and see instructions for format requirements.)		X	
j Were any plan transactions or series of transactions in excess of 5% of the current value of plan assets? (Attach schedule of transactions if "Yes" is checked, and see instructions for format requirements.)		X	
k Were all the plan assets either distributed to participants or beneficiaries, transferred to another plan, or brought under the control of the PBGC?		X	
l Has the plan failed to provide any benefit when due under the plan?		X	
m If this is an individual account plan, was there a blackout period? (See instructions and 29 CFR 2520.101-3.)			
n If 4m was answered "Yes," check the "Yes" box if you either provided the required notice or one of the exceptions to providing the notice applied under 29 CFR 2520.101-3.			

5a Has a resolution to terminate the plan been adopted during the plan year or any prior plan year?..... ☐ Yes ☒ No
If "Yes," enter the amount of any plan assets that reverted to the employer this year _____.

5b If, during this plan year, any assets or liabilities were transferred from this plan to another plan(s), identify the plan(s) to which assets or liabilities were transferred. (See instructions.)

5b(1) Name of plan(s)	5b(2) EIN(s)	5b(3) PN(s)

5c If the plan is a defined benefit plan, is it covered under the PBGC insurance program (See ERISA section 4021.)? ☒ Yes ☐ No ☐ Not determined
If "Yes" is checked, enter the My PAA confirmation number from the PBGC premium filing for this plan year 4136884. (See instructions.)

<div>SCHEDULE R (Form 5500) Department of the Treasury Internal Revenue Service Department of Labor Employee Benefits Security Administration Pension Benefit Guaranty Corporation</div>	<div>Retirement Plan Information</div> <div>This schedule is required to be filed under sections 104 and 4065 of the Employee Retirement Income Security Act of 1974 (ERISA) and section 6058(a) of the Internal Revenue Code (the Code).</div> <div>▶ File as an attachment to Form 5500.</div>	<div>OMB No. 1210-0110</div> <div>2017</div> <div>This Form is Open to Public Inspection.</div>
For calendar plan year 2017 or fiscal plan year beginning 10/01/2017 and ending 09/30/2018		
A Name of plan ASHLAND HERCULES PENSION PLAN		B Three-digit plan number (PN) ▶ 001
C Plan sponsor's name as shown on line 2a of Form 5500 VALVOLINE LLC		D Employer Identification Number (EIN) 61-1782197
Part I	Distributions	
All references to distributions relate only to payments of benefits during the plan year.		
1 Total value of distributions paid in property other than in cash or the forms of property specified in the instructions		1 0
2 Enter the EIN(s) of payor(s) who paid benefits on behalf of the plan to participants or beneficiaries during the year (if more than two, enter EINs of the two payors who paid the greatest dollar amounts of benefits): EIN(s): 13-5160382		
Profit-sharing plans, ESOPs, and stock bonus plans, skip line 3.		
3 Number of participants (living or deceased) whose benefits were distributed in a single sum, during the plan year		3 2792
Part II	Funding Information (If the plan is not subject to the minimum funding requirements of section 412 of the Internal Revenue Code or ERISA section 302, skip this Part.)	
4 Is the plan administrator making an election under Code section 412(d)(2) or ERISA section 302(d)(2)? ☐ Yes ☒ No ☐ N/A If the plan is a defined benefit plan, go to line 8.		
5 If a waiver of the minimum funding standard for a prior year is being amortized in this plan year, see instructions and enter the date of the ruling letter granting the waiver. Date: Month Day Year If you completed line 5, complete lines 3, 9, and 10 of Schedule MB and do not complete the remainder of this schedule.		
6 a Enter the minimum required contribution for this plan year (include any prior year accumulated funding deficiency not waived)		6a
b Enter the amount contributed by the employer to the plan for this plan year		6b
c Subtract the amount in line 6b from the amount in line 6a. Enter the result (enter a minus sign to the left of a negative amount)		6c
If you completed line 6c, skip lines 8 and 9.		
7 Will the minimum funding amount reported on line 6c be met by the funding deadline? ☐ Yes ☐ No ☐ N/A		
8 If a change in actuarial cost method was made for this plan year pursuant to a revenue procedure or other authority providing automatic approval for the change or a class ruling letter, does the plan sponsor or plan administrator agree with the change? ☐ Yes ☐ No ☒ N/A		
Part III	Amendments	
9 If this is a defined benefit pension plan, were any amendments adopted during this plan year that increased or decreased the value of benefits? If yes, check the appropriate box. If no, check the "No" box. ☐ Increase ☐ Decrease ☐ Both ☒ No		
Part IV	ESOPs (see instructions). If this is not a plan described under section 409(a) or 4975(e)(7) of the Internal Revenue Code, skip this Part.	
10 Were unallocated employer securities or proceeds from the sale of unallocated securities used to repay any exempt loan? ☐ Yes ☐ No		
11 a Does the ESOP hold any preferred stock? ☐ Yes ☐ No		
b If the ESOP has an outstanding exempt loan with the employer as lender, is such loan part of a "back-to-back" loan? (See instructions for definition of "back-to-back" loan.) ☐ Yes ☐ No		
12 Does the ESOP hold any stock that is not readily tradable on an established securities market? ☐ Yes ☐ No		
For Paperwork Reduction Act Notice, see the Instructions for Form 5500.		
Schedule R (Form 5500) 2017 v. 170203		

Part V Additional Information for Multiemployer Defined Benefit Pension Plans

13 Enter the following information for each employer that contributed more than 5% of total contributions to the plan during the plan year (measured in dollars). See instructions. *Complete as many entries as needed to report all applicable employers.*

a Name of contributing employer

b EIN

c Dollar amount contributed by employer

d Date collective bargaining agreement expires (If employer contributes under more than one collective bargaining agreement, check box ☐ and see instructions regarding required attachment. Otherwise, enter the applicable date.) Month _____ Day _____ Year _____

e Contribution rate information (If more than one rate applies, check this box ☐ and see instructions regarding required attachment. Otherwise, complete lines 13e(1) and 13e(2).)

(1) Contribution rate (in dollars and cents) _____

(2) Base unit measure: ☐ Hourly ☐ Weekly ☐ Unit of production ☐ Other (specify): _____

a Name of contributing employer

b EIN

c Dollar amount contributed by employer

d Date collective bargaining agreement expires (If employer contributes under more than one collective bargaining agreement, check box ☐ and see instructions regarding required attachment. Otherwise, enter the applicable date.) Month _____ Day _____ Year _____

e Contribution rate information (If more than one rate applies, check this box ☐ and see instructions regarding required attachment. Otherwise, complete lines 13e(1) and 13e(2).)

(1) Contribution rate (in dollars and cents) _____

(2) Base unit measure: ☐ Hourly ☐ Weekly ☐ Unit of production ☐ Other (specify): _____

a Name of contributing employer

b EIN

c Dollar amount contributed by employer

d Date collective bargaining agreement expires (If employer contributes under more than one collective bargaining agreement, check box ☐ and see instructions regarding required attachment. Otherwise, enter the applicable date.) Month _____ Day _____ Year _____

e Contribution rate information (If more than one rate applies, check this box ☐ and see instructions regarding required attachment. Otherwise, complete lines 13e(1) and 13e(2).)

(1) Contribution rate (in dollars and cents) _____

(2) Base unit measure: ☐ Hourly ☐ Weekly ☐ Unit of production ☐ Other (specify): _____

a Name of contributing employer

b EIN

c Dollar amount contributed by employer

d Date collective bargaining agreement expires (If employer contributes under more than one collective bargaining agreement, check box ☐ and see instructions regarding required attachment. Otherwise, enter the applicable date.) Month _____ Day _____ Year _____

e Contribution rate information (If more than one rate applies, check this box ☐ and see instructions regarding required attachment. Otherwise, complete lines 13e(1) and 13e(2).)

(1) Contribution rate (in dollars and cents) _____

(2) Base unit measure: ☐ Hourly ☐ Weekly ☐ Unit of production ☐ Other (specify): _____

a Name of contributing employer

b EIN

c Dollar amount contributed by employer

d Date collective bargaining agreement expires (If employer contributes under more than one collective bargaining agreement, check box ☐ and see instructions regarding required attachment. Otherwise, enter the applicable date.) Month _____ Day _____ Year _____

e Contribution rate information (If more than one rate applies, check this box ☐ and see instructions regarding required attachment. Otherwise, complete lines 13e(1) and 13e(2).)

(1) Contribution rate (in dollars and cents) _____

(2) Base unit measure: ☐ Hourly ☐ Weekly ☐ Unit of production ☐ Other (specify): _____

a Name of contributing employer

b EIN

c Dollar amount contributed by employer

d Date collective bargaining agreement expires (If employer contributes under more than one collective bargaining agreement, check box ☐ and see instructions regarding required attachment. Otherwise, enter the applicable date.) Month _____ Day _____ Year _____

e Contribution rate information (If more than one rate applies, check this box ☐ and see instructions regarding required attachment. Otherwise, complete lines 13e(1) and 13e(2).)

(1) Contribution rate (in dollars and cents) _____

(2) Base unit measure: ☐ Hourly ☐ Weekly ☐ Unit of production ☐ Other (specify): _____

- 14** Enter the number of participants on whose behalf no contributions were made by an employer as an employer of the participant for:

a The current year	14a	
b The plan year immediately preceding the current plan year	14b	
c The second preceding plan year	14c	

- 15** Enter the ratio of the number of participants under the plan on whose behalf no employer had an obligation to make an employer contribution during the current plan year to:

a The corresponding number for the plan year immediately preceding the current plan year	15a	
b The corresponding number for the second preceding plan year	15b	

- 16** Information with respect to any employers who withdrew from the plan during the preceding plan year:

a Enter the number of employers who withdrew during the preceding plan year	16a	
b If line 16a is greater than 0, enter the aggregate amount of withdrawal liability assessed or estimated to be assessed against such withdrawn employers	16b	

- 17** If assets and liabilities from another plan have been transferred to or merged with this plan during the plan year, check box and see instructions regarding supplemental information to be included as an attachment. ☐

Part VI Additional Information for Single-Employer and Multiemployer Defined Benefit Pension Plans

- 18** If any liabilities to participants or their beneficiaries under the plan as of the end of the plan year consist (in whole or in part) of liabilities to such participants and beneficiaries under two or more pension plans as of immediately before such plan year, check box and see instructions regarding supplemental information to be included as an attachment ☐

- 19** If the total number of participants is 1,000 or more, complete lines (a) through (c)

- a** Enter the percentage of plan assets held as:

Stock: 0.1% Investment-Grade Debt: 78.7% High-Yield Debt: 0.0% Real Estate: 0.0% Other: 21.2%

- b** Provide the average duration of the combined investment-grade and high-yield debt:

☐ 0-3 years ☐ 3-6 years ☐ 6-9 years ☒ 9-12 years ☐ 12-15 years ☐ 15-18 years ☐ 18-21 years ☐ 21 years or more

- c** What duration measure was used to calculate line 19(b)?

☐ Effective duration ☐ Macaulay duration ☐ Modified duration ☒ Other (specify): MODIFIED ADJUSTED

Ashland Hercules Pension Plan

Financial Statements

*Years ended September 30, 2018 and 2017
with Report of Independent Auditors*

Ashland Hercules Pension Plan
TABLE OF CONTENTS
September 30, 2018 and 2017

	<u>Page</u>
Report of Independent Registered Public Accounting Firm	<u>3</u>
Financial Statements:	
Statements of Net Assets Available for Benefits	<u>4</u>
Statements of Changes in Net Assets Available for Benefits	<u>5</u>
Notes to Financial Statements	<u>6</u>

Supplemental Schedules*

*Supplemental schedules required by Section 2520.103-10 of the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974, as amended, have been omitted because they are not applicable.



REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Plan Administrator, Valvoline LLC

Ashland Hercules Pension Plan

We were engaged to audit the accompanying financial statements of the Ashland Hercules Pension Plan ("the Plan"), which comprise the statements of net assets available for benefits as of September 30, 2018 and 2017, and the related statements of changes in net assets available for benefits for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Plan management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on conducting the audit in accordance with auditing standards generally accepted in the United States of America. Because of the matter described in the *Basis for Disclaimer of Opinion* paragraph, however, we were not able to obtain sufficient appropriate audit evidence to provide a basis for an audit opinion.

Basis for Disclaimer of Opinion

As permitted by 29 CFR 2520.103-8 of the Department of Labor's ("DOL") Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974, as amended, the plan administrator instructed us not to perform, and we did not perform, any auditing procedures with respect to the information summarized in Note 3, which was certified by The Bank of New York Mellon, the trustee of the Plan, except for comparing such information with the related information included in the financial statements. We have been informed by the plan administrator that the trustee holds the Plan's investment assets and executes investment transactions. The plan administrator has obtained a certification from the trustee as of and for the years ended September 30, 2018 and 2017, that the information provided to the plan administrator by the trustee is complete and accurate.

Disclaimer of Opinion

Because of the significance of the matter described in the *Basis for Disclaimer of Opinion* paragraph, we have not been able to obtain sufficient appropriate audit evidence to provide a basis for an audit opinion. Accordingly, we do not express an opinion on these financial statements.

Report on Form and Content in Compliance with DOL Rules and Regulations

The form and content of the information included in the financial statements, other than that derived from the information certified by the trustee, have been audited by us in accordance with auditing standards generally accepted in the United States of America and, in our opinion, are presented in compliance with the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974.

Blue & Co., LLC

Lexington, Kentucky
June 26, 2019

Ashland Hercules Pension Plan
STATEMENTS OF NET ASSETS AVAILABLE FOR BENEFITS
As of September 30

(in thousands)	2018	2017
Assets		
Investments, at fair value:		
Participating units in the Valvoline LLC Defined Benefit Trust	\$ 1,737,846	\$ 2,026,587
Net assets available for benefits	<u>\$ 1,737,846</u>	<u>\$ 2,026,587</u>

See accompanying notes to financial statements.

STATEMENTS OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS

Years ended September 30

(in thousands)	2018	2017
Additions to net assets attributed to:		
Investment (loss) income in the Plan's interest in the Valvoline LLC Defined Benefit Trust	\$ (24,047)	\$ 151,979
Employer contributions	—	395,463
Total additions, net	(24,047)	547,442
Deductions from net assets attributed to:		
Benefits paid to participants	265,053	186,658
Administrative expenses	9,478	18,645
Total deductions	274,531	205,303
Transfers with other benefit plans:		
Transfers from other benefit plans	8,467	6,560
Transfers from (to) insurers	1,370	(575,526)
Total transfers	9,837	(568,966)
Decrease in net assets	(288,741)	(226,827)
Net assets available for benefits		
Beginning of year	2,026,587	2,253,414
End of year	<u>\$ 1,737,846</u>	<u>\$ 2,026,587</u>

See accompanying notes to financial statements.

NOTE 1 - DESCRIPTION OF THE PLAN

The following description of the Ashland Hercules Pension Plan (the "Plan") provides only general information. Participants should refer to the Plan's summary plan description for a more complete description of the Plan's provisions.

General

The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974, as amended ("ERISA"). This non-contributory, defined benefit pension plan was established in March 1951 for the benefit of substantially all U.S. employees of the former Plan sponsor, Ashland Global Holdings Inc. (which together with its predecessors and consolidated subsidiaries is referred to herein as "Ashland"). The majority of the Plan was closed to new participants effective January 1, 2011, and the accrual of benefits for all participants was frozen effective September 30, 2016. Sponsorship of the Plan transferred from Ashland to Valvoline LLC ("Valvoline" or the "Company") on September 1, 2016.

Separation from Ashland

The Valvoline business operated as a wholly-owned subsidiary of Ashland prior to the Valvoline Inc. initial public offering (the "IPO") in September 2016. In advance of the IPO, the Valvoline business was transferred from Ashland to Valvoline, as well as certain other legacy Ashland assets and liabilities, including the Plan. After the IPO, Ashland owned 83% of the total outstanding shares of Valvoline Inc.'s common stock through May 12, 2017, when Ashland distributed its remaining interest to Ashland shareholders, which marked the completion of Valvoline Inc.'s separation from Ashland.

Pension benefits

The Plan currently has approximately 14,000 vested participants, which include active Valvoline employees, retirees, and terminated employees that are current and former employees of Ashland. Plan benefits were earned by qualifying participants and vested after meeting minimum service requirements, generally five or more years of service. Plan benefits were based on length of service and compensation, and certain Plan benefits included a cash balance design. Plan participants that also have benefits in the Ashland Inc. Leveraged Employee Stock Ownership Plan ("LESOP"), which was merged into the Valvoline 401(k) Plan, effective May 1, 2017, may elect certain transfers of their LESOP benefits to the Plan. These transfers are included in Transfers from other benefit plans in the Statements of Changes in Net Assets Available for Benefits. Qualifying participants are entitled to Plan benefits once retirement age is met or a qualifying disability occurs, and certain elections are available for early reduced benefits prior to retirement age. Plan benefits are generally limited to the Social Security earnings base, not to exceed the maximum limits under Section 401(a)(17) of the Internal Revenue Code ("IRC").

Terminated participants with a present value of benefits greater than \$5,000 may elect to receive a direct rollover to another tax-qualified plan or account, or the participant may leave the benefits within the Plan until a distributable event occurs.

Death benefits

Upon completing age and service requirements for pension eligibility, a participant may make an election to provide a death benefit for a designated beneficiary in the event of the participant's death prior to retirement. The beneficiary's death benefit shall be computed based on the participant's service and benefits accrued through the date of death and reduced in accordance with Plan provisions based on the payment option elected.

Administrative expenses

Fees for administration, investment advice, actuarial and other third party services are paid by the Valvoline LLC Defined Benefit Trust (the "Trust"). The Trust is not charged for administrative services performed on its behalf by Valvoline.

Risks and uncertainties

The Trust invests in various investment securities, which are exposed to various risks, such as interest rate, market fluctuations and credit risks. In addition, while the Plan believes its valuation methods are appropriate and

consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of Plan investments could result in a different fair value measurement. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in risk in the near term could materially affect the amounts reported in the Statements of Net Assets Available for Benefits.

The actuarial present value of accumulated plan benefits are reported based on certain assumptions pertaining to interest rates, inflation rates and employee demographics, all of which are subject to change. Due to uncertainties inherent in the estimation and assumptions process, it is at least reasonably possible that changes in these estimates and assumptions in the near term could be material to the financial statements.

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of accounting

The accompanying financial statements are prepared on the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). The preparation of the Plan's financial statements in conformity with U.S. GAAP requires the Plan's management to make estimates and assumptions that affect the amounts reported in these financial statements and accompanying notes. Actual results could differ from those estimates.

Master trust

The Plan's investments are held in the Trust, a master trust fund, of which the Plan includes the only investments within the Trust. Accordingly, the Trust's investment returns represent those of the Plan, and the Plan does not have investments outside of the Trust.

Investment valuation

The Plan's investment in the Trust is reported at fair value. Fair value is defined as an exit price, representing the amount that would be received to sell an asset or the amount paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. As such, fair value is a market-based measurement determined based on assumptions that market participants would use in pricing an asset or liability.

As a basis for considering such assumptions, the accounting guidance prioritizes the inputs used to measure fair value into the following three-tier fair value hierarchy for which an instrument's classification within the fair value hierarchy is based upon the lowest level of input that is significant to the instrument's fair value measurement:

- Level 1 - Observable inputs such as unadjusted quoted prices in active markets for identical assets or liabilities.
- Level 2 - Inputs other than quoted prices included in Level 1, that are observable for the asset or liability, either directly or indirectly. These include quoted prices for similar assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not active.
- Level 3 - Unobservable inputs for the asset or liability for which there is little, if any, market activity at the measurement date. Unobservable inputs reflect the Plan's assumptions about what market participants would use to price the asset or liability. The inputs are developed based on the best information available in the circumstances, which may include the Plan's own financial data, such as internally developed pricing models, discounted cash flow ("DCF") methodologies, as well as instruments for which the fair value determination requires significant management judgment.

When applicable, the Plan's policy is to recognize transfers between levels as of the end of the reporting period. Certain investments which measure fair value using the net asset value ("NAV") per share practical expedient are not classified within the fair value hierarchy and are separately disclosed.

The Plan measures its investments at fair value based on one or more of the following three valuation techniques:

- Market approach: Prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities
- Cost approach: Amount that would be required to replace the service capacity of an asset (replacement cost)

- Income approach: Techniques to convert future amounts to a single present amount based upon market expectations (including present value techniques, option pricing and excess earnings models)

The Plan generally uses a market approach, when practicable. In certain instances, when observable market data is lacking, the Plan uses valuation techniques consistent with the income approach whereby future cash flows are converted to a single discounted amount. The Plan uses multiple sources of pricing as well as trading and other market data in the process of reporting fair values.

Purchases and sales of securities are reflected on a trade date basis. Gains or losses on sales of securities are based on average cost. Dividend income is recorded on the ex-dividend date. Returns on investments are recorded as earned on an accrual basis.

Actuarial present value of accumulated plan benefits

Accumulated plan benefits represent estimated future periodic payments, including lump-sum distributions, of Plan benefits expected to be paid to Plan participants or their beneficiaries upon retirement, death, or other distributable event. The actuarial present value of these accumulated plan benefits, as determined by the Plan's actuary, is the result from applying actuarial assumptions to adjust the accumulated plan benefits to reflect the time value of money through discounts for interest and the probability of payment by means of decrements for distributable events such as retirement, death, disability, or withdrawal between the date as of which the benefit information is presented, the valuation date, and the expected date of payment.

For the Plan years ended September 30, 2018 and 2017, the date as of which the benefit information is presented, the valuation date, is October 1, 2017 and 2016, respectively. The significant actuarial assumptions utilized in the valuations were as follows as of October 1:

Key Assumption	2017	2016
Discount rate	3.77% weighted average split discount rate	3.56% weighted average split discount rate
Mortality	Society of Actuaries RP-2014 generational employee / annuitant mortality base tables for males and females with no collar adjustments, with mortality improvements after 2006 removed and replaced with a mortality improvement scale based on the intermediate projection in the Social Security Administration's Annual Trustees Report released in 2017 as reflected in the MSS-2017 improvement scale	Society of Actuaries RP-2014 generational employee / annuitant mortality base tables for males and females with no collar adjustments, with mortality improvements after 2006 removed and replaced with a mortality improvement scale based on the combined intermediate projections published by the Society of Actuaries in 2015 as reflected in the MP-2015 improvement scale and an estimate of the intermediate projections from the Society of Actuaries MP-2016 improvement scale by utilizing 2016 improvement data from the Social Security Administration

Benefit payments

Benefit payments to participants or their beneficiaries are recognized at the time of distribution.

Date of management's review

The Plan evaluates events occurring subsequent to the date of the financial statements in determining the accounting for and disclosure of transactions and events that affect the financial statements. Subsequent events have been evaluated through June 26, 2019, which is the date the financial statements were available to be issued.

Recent accounting pronouncements

In August 2018, the Financial Accounting Standards Board ("FASB") issued accounting guidance that modifies the disclosure requirements with respect to fair value measurements. Among the changes, entities will no longer be required to disclose the amount of and reasons for transfers between Levels 1 and 2 of the fair value hierarchy, but will be required to disclose the range and weighted average used to develop significant unobservable inputs for Level 3 fair value measurements. Valvoline early adopted this guidance in the Plan year ended September 30, 2018, which does not have an impact on the Plan's financial statements, but revises certain disclosures as reflected in Note 4 herein.

In February 2017, the FASB issued accounting guidance that requires an employee benefit plan to report an interest in a master trust and the change in the value of that interest as separate line items on the statement of net assets available for benefits and the statement of changes in net assets available for benefits, respectively. Additionally, an employee benefit plan is required to disclose the master trust's investments and other assets and liabilities, as well as the amount of its interest in these balances. This guidance must be applied retrospectively and is effective for the Plan on October 1, 2019, with early adoption permitted. Plan management does not expect there to be a material impact of adoption as the Plan does not currently have investments outside of the Trust. Accordingly, the Plan financial statements currently present the Plan's interest in the Trust and the change in the value of that interest.

NOTE 3 - INVESTMENTS

The Plan has elected the method of compliance as permitted by 29 CFR 2520.103-8 of the Department of Labor's Rules and Regulations for Reporting and Disclosure under ERISA. Accordingly, the Bank of New York Mellon (the "Plan Trustee"), has certified to the completeness and accuracy of all investments reflected within the accompanying Statements of Net Assets Available for Benefits as of September 30, 2018 and 2017, as well as the related investment activity reflected within the Statements of Changes in Net Assets Available for Benefits for the years ended September 30, 2018 and 2017.

Trust net assets

The following table presents the assets, including investments and liabilities of the Trust as of September 30:

(in thousands)	2018	2017
Investments at fair value as determined by quoted market prices		
Cash and cash equivalents	\$ 100,914	\$ 72,210
Government securities	(2,830)	206,125
Corporate debt instruments	653,430	923,283
Corporate stocks	—	106
	<u>751,514</u>	<u>1,201,724</u>
Investments at estimated fair value		
Government securities	166,839	187,616
Corporate debt instruments	390,356	260,404
Corporate stocks	14	69
Common collective trusts	265	—
Other investments	—	16,327
	<u>557,474</u>	<u>464,416</u>
Investments at net asset value per share practical expedient		
Common collective trusts	354,898	—
Private equity and hedge funds	60,525	412,982
	<u>415,423</u>	<u>412,982</u>
Total investments	1,724,411	2,079,122
Receivables	37,057	99,957
Total assets	<u>1,761,468</u>	<u>2,179,079</u>
Payables	(23,622)	(152,492)
Net assets	<u>\$ 1,737,846</u>	<u>\$ 2,026,587</u>

The following table presents the net appreciation (depreciation) in Plan investments for the years ended September 30:

(in thousands)	2018	2017
Net (depreciation) appreciation in fair value of investments	\$ (91,108)	\$ 90,121
Investment income:		
Interest	69,957	63,044
Dividends	649	2,984
Total net (depreciation) appreciation^(a)	\$ (20,502)	\$ 156,149

(a) Excludes investment-related expenses of \$3,545 thousand and \$4,170 thousand for the years ended September 30, 2018 and 2017, respectively, that are included within Investment (loss) income in the Plan's interest in the Valvoline LLC Defined Benefit Trust within the Statements of Changes in Net Assets Available for Benefits.

Trust derivative contracts

The Trust, through the activities of certain of its investment managers, uses derivative financial instruments in connection with its normal trading activities in an effort to improve investment return or control risk. Derivative financial instruments generally are viewed as a more cost effective and efficient means of providing liquidity than owning the underlying security. They can also provide unique risk/return structures for the Trust. The derivative financial instruments used in the Trust include futures contracts, options, as well as interest rate and credit default swaps. The Trust does not take on any leverage at the Trust level, and futures positions are covered by short-term marketable securities.

Futures contracts provide for the delivery or purchase of financial instruments on a specified future date at a specified price or yield. The Trust purchases futures contracts principally for exposure to fixed income securities, which generally are settled in the market prior to delivery of the underlying securities. Additionally, the Trust issues options which obligate the Trust to either buy or sell the underlying fixed income instruments at a specific price if the options are exercised. The Trust receives a premium upon issuance of the options.

The Trust is exposed to risks from changes in interest rates or market values of the securities underlying the futures and option contracts. Changes in interest rates on outstanding futures contracts are settled on a daily basis thereby minimizing the Trust's exposure to credit loss. The Trust is also exposed to credit risk in the event of nonperformance by the counterparties to the futures and options contracts. The Trust does not anticipate nonperformance by the counterparties and generally does not require counterparty collateral.

The fair value of these derivative contracts, as noted below, are included in Government securities and obligations and Corporate debt instruments in the table above. The following table presents a summary of the open derivative contracts as of September 30:

(in thousands)	2018		2017	
	Contracts	Fair value	Contracts	Fair value
Derivative assets				
Government securities:				
U.S. Treasury futures	3	\$ 279	5	\$ 581
Interest rate swaps	11	\$ 46,630	12	\$ 1,959
Credit default swaps	6	\$ 2,339	14	\$ 9,339
S&P 500 index futures	1	\$ 93	—	\$ —
Corporate debt instruments:				
Credit default swaps	—	\$ —	11	\$ 1,318
Derivative liabilities				
Government securities:				
U.S. Treasury futures	8	\$ 4,340	13	\$ 2,411
Interest rate swaps	20	\$ 46,549	10	\$ 2,508
Credit default swaps	1	\$ 3	7	\$ 1,113
Corporate debt instruments:				
Credit default swaps	—	\$ —	14	\$ 390

For the years ended September 30, 2018 and 2017, the Trust realized a net trading loss on futures, options and swap contracts of approximately \$3,802 thousand and \$17,429 thousand, respectively.

Investment strategy

In developing an investment strategy for the Plan, Valvoline considered the following factors: the nature of the Plan's liabilities, the allocation of liabilities between active, terminated and retired plan participants, the funded status of the Plan, the applicable investment horizon, the respective size of the Plan and historical and expected investment returns. The Plan's assets are managed by outside investment managers, which are monitored against investment return benchmarks and Valvoline's established investment strategy. Investment managers are selected based on an analysis of, among other things, their investment process, historical investment results, frequency of management turnover, cost structure and assets under management. Assets are periodically reallocated between investment managers to maintain an appropriate asset mix, diversification of investments and to optimize returns.

The Valvoline Retirement Committee ("VRC"), which includes members of Valvoline senior management, meets on a quarterly basis and is responsible for making investment policy decisions and reviewing investment performance for the Plan. Beginning in the Plan year ended September 30, 2018, certain Trust investments are managed in accordance with the VRC's investment policy guidelines by the Goldman Sachs Group, Inc. ("Goldman Sachs"). In addition, Goldman Sachs acts as the investment advisor for the Trust. Fees paid by the Plan to Goldman Sachs during the Plan year ended September 30, 2018 for investment management and advisory services are included in Administrative expenses in the Statement of Changes in Net Assets Available for Benefits.

Pension settlement program

During the Plan year ended September 30, 2018, Valvoline offered the option to receive a lump sum payment to certain participants with vested Plan benefits in lieu of receiving monthly annuity payments. Approximately 2,600 participants elected to receive the settlement, and lump sum payments were made from Plan assets to these participants in September 2018 for approximately \$134 million and are included in Benefits paid to participants within the Statement of Changes in Net Assets Available for Benefits. The benefit obligation settled approximated payments to Plan participants.

Pension annuity program

During September 2017, Valvoline used Plan assets to purchase a non-participating annuity contract from an insurer to pay and administer future pension benefits for approximately 6,000 participants within the Plan. Valvoline transferred approximately \$585 million of the outstanding pension benefit obligation in exchange for Plan Trust assets whose value approximated the liability value. A portion of these assets was returned to the Plan during the Plan year ended September 30, 2018 due to the finalization of data. The transfer of Plan Trust assets with the insurer is presented as Transfers from (to) insurers within the Statements of Changes in Net Assets Available for Benefits for the Plan years ended September 30, 2018 and 2017.

The insurers unconditionally and irrevocably guaranteed the full payment of benefits to Plan participants associated with the annuity purchase and benefit payments are being made in the same form in effect under the Plan. The insurers assumed all investment risk associated with the Plan assets that were delivered as annuity contract premiums.

NOTE 4 - FAIR VALUE

The following table sets forth by level, within the fair value hierarchy, the Trust's investments at fair value as of September 30, 2018:

(in thousands)	Total fair value	Quoted prices in active markets for identical assets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3	Assets measured at NAV
Assets					
Cash and cash equivalents	\$ 102,818	\$ 102,818	\$ —	\$ —	\$ —
Government securities	214,920	1,529	213,391	—	—
Corporate debt instruments	1,043,786	653,430	390,356	—	—
Corporate stocks	14	—	—	14	—
Private equity and hedge funds	60,525	—	—	—	60,525
Common collective trusts	355,163	—	265	—	354,898
Total assets	1,777,226	757,777	604,012	14	415,423
Liabilities					
Cash and cash equivalents	(1,904)	(1,904)	—	—	—
Government securities	(50,911)	(4,359)	(46,552)	—	—
Total liabilities	(52,815)	(6,263)	(46,552)	—	—
Total assets at fair value	\$ 1,724,411	\$ 751,514	\$ 557,460	\$ 14	\$ 415,423

The following table sets forth by level, within the fair value hierarchy, the Trust's investments at fair value as of September 30, 2017:

(in thousands)	Total fair value	Quoted prices in active markets for identical assets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3	Assets measured at NAV
Assets					
Cash and cash equivalents	\$ 141,102	\$ 141,102	\$ —	\$ —	\$ —
Government securities	399,798	208,536	191,262	—	—
Corporate debt instruments	1,184,077	923,283	260,794	—	—
Corporate stocks	175	106	54	15	—
Private equity and hedge funds	412,982	—	—	—	412,982
Other investments	16,327	—	—	16,327	—
Total assets	2,154,461	1,273,027	452,110	16,342	412,982
Liabilities					
Cash and cash equivalents	(68,892)	(68,892)	—	—	—
Government securities	(6,057)	(2,411)	(3,646)	—	—
Corporate debt instruments	(390)	—	(390)	—	—
Total liabilities	(75,339)	(71,303)	(4,036)	—	—
Total assets at fair value	\$ 2,079,122	\$ 1,201,724	\$ 448,074	\$ 16,342	\$ 412,982

Cash and cash equivalents

The carrying value of cash and cash equivalents approximates fair value.

Government securities

Government securities that trade in an active market are valued using quoted market prices, which are Level 1 inputs. Other government securities are valued based on Level 2 inputs, which include yields available for comparable securities and issuers with similar credit ratings. Treasury futures are used to manage interest rate risk and are valued at the closing price reported on the exchange market for exchange-traded futures, which is a Level 1 input. Interest rate swaps are also utilized to manage interest rate risk and are valued based on Level 2 inputs that consist of observable yield curves.

Corporate debt instruments

Corporate debt instruments that trade in an active market are valued using quoted market prices, which are Level 1 inputs. Other corporate debt instruments are valued based on Level 2 inputs, which includes quoted market prices in inactive markets and observable market quotations for similar bonds.

Corporate stocks

Corporate stocks that trade in an active market are valued using quoted market prices, which are Level 1 inputs. Corporate stocks with quoted market prices that trade in inactive markets or are valued using observable market quotations for similar stocks are Level 2 inputs. Certain corporate stocks with limited market activity are valued using unobservable Level 3 inputs, including future cash flows.

Private equity and hedge funds

Private equity and hedge funds primarily represent alternative investments not traded on an active market which are valued at the NAV per share determined by the manager of the fund based on the fair value of the underlying net assets owned by the fund divided by the number of shares or units outstanding.

Common collective trusts

Common collective trusts are comprised of a diversified portfolio of investments across various asset classes, including U.S. and international equities, fixed-income securities, commodities and currencies. The collective trust funds are valued using a NAV provided by the manager of each fund, which is based on the underlying net assets owned by the fund, divided by the number of shares outstanding.

Other investments

Other investments were liquidated during the Plan year ended September 30, 2018 and represented real estate investments that were valued using DCF and unobservable Level 3 inputs, including future rentals, expenses and residual values from a market participant view of the highest and best use of the real estate.

The following table provides a reconciliation of the beginning and ending balances for Level 3 Plan assets:

(in thousands)	Total Level 3 assets
Balance at September 30, 2016	\$ 22,532
Actual return on assets held at year end	(6,190)
Balance at September 30, 2017	\$ 16,342
Purchases	—
Sales	(8,573)
Actual return on assets held at end of year	(1)
Actual return on assets sold during year	(7,754)
Balance at September 30, 2018	\$ 14

The following table summarizes investments for which fair value is measured using the NAV per share practical expedient as of September 30, 2018:

(in thousands)	Fair Value	Unfunded commitments	Redemption frequency (if currently eligible)	Redemption notice period
Long/short hedge funds	\$ 38,269	\$ —	None ^(a)	None ^(a)
Relative value hedge funds	11,400	—	None ^(b)	None ^(b)
Multi-strategy hedge funds	2,444	—	None ^(b)	None ^(b)
Event-driven hedge funds	964	—	None ^(b)	None ^(b)
Common collective trusts	343,098	—	Daily	Up to 3 days
	11,800	—	Monthly	5 days
Private equity	7,448	5,950	None ^(c)	None ^(c)
	<u>\$ 415,423</u>	<u>\$ 5,950</u>		

(a) These hedge funds are in the process of liquidation and approximately 88% will be liquidated over the next year.

(b) These hedge funds are in the process of liquidation and the timing of such is unknown.

(c) These private equity instruments are estimated to be liquidated over the next 1 to 5 years.

NOTE 5 - ACTUARIAL PRESENT VALUE OF ACCUMULATED PLAN BENEFITS

For the Plan years ended September 30, 2018 and 2017, the date as of which the benefit information is presented, the valuation date, is October 1, 2017 and 2016, respectively. The actuarial present value of accumulated plan benefits is shown below as of October 1:

(in thousands)	2017	2016
Vested benefits:		
Participants currently receiving benefits	\$ 1,434,375	\$ 1,982,123
Other participants	804,269	951,401
	2,238,644	2,933,524
Nonvested benefits ^(a)	4,366	10,162
Total actuarial present value of accumulated plan benefits	\$ 2,243,010	\$ 2,943,686

(a) Represents estimated pre-retirement death benefits, which are nonvested for purposes of the actuarial present value of accumulated plan benefits until the distributable event is expected to occur.

The table below reconciles and details the year-to-year changes in the actuarial present value of accumulated plan benefits:

(in thousands)	
Actuarial present value of accumulated plan benefits at October 1, 2016	\$ 2,943,686
Increase (decrease) during the plan year attributable to:	
Actuarial losses	38,290
Interest due to decrease in discount period	89,877
Benefits paid	(773,622)
Change in actuarial assumptions	(55,221)
Actuarial present value of accumulated plan benefits at October 1, 2017	\$ 2,243,010

NOTE 6 - FUNDING POLICY AND PLAN TERMINATION

Funding policy

The Plan meets the ERISA minimum funding requirements. Valvoline seeks a long run funding level of 100% on a projected benefit obligation basis, but recognizes that year-to-year funding levels may vary widely. During the Plan year ended September 30, 2017, Valvoline made discretionary contributions of \$394 million to the Plan, and no contributions were required or made during the Plan year ended September 30, 2018.

Plan termination

The Company has the right to discontinue its contributions and to terminate the Plan at any time. In the event of termination, the net assets of the Plan shall be first used to pay expenses of administration and then to provide benefits to participants in accordance with Section 4044 of ERISA, generally in the following order:

1. Annuity benefits that former employees or their beneficiaries have been receiving for at least three years or that employees eligible to retire for that three-year period would have been receiving if they had retired with benefits in the normal form of annuity under the Plan. The priority amount is limited to the lowest benefit payable during those three years and is further limited to the lowest benefit that would be payable under Plan provisions in effect at any time during the five years preceding Plan termination.
2. Other vested benefits insured by the Pension Benefit Guaranty Corporation ("PBGC") up to the applicable limitations discussed below.
3. All other vested benefits not insured by the PBGC.
4. All nonvested benefits.

Any residual assets remaining after all liabilities are satisfied would be returned to the Company.

If the Plan's net assets are inadequate, the PBGC generally guarantees the payment of vested normal retirement age benefits, early retirement benefits, and certain disability and beneficiary pensions. However, the PBGC does not

guarantee all types of benefits under the Plan, and the amount of benefit protection is subject to certain limitations. Vested benefits under the Plan are guaranteed at the level in effect on the date of plan termination. However, there is a statutory ceiling, which is adjusted periodically, on the amount of an individual's monthly benefit that the PBGC guarantees. For plan terminations during the years ended September 30, 2018 and 2017, that ceiling was \$5,420 and \$5,369 per month, respectively. That ceiling applies to those pensioners who elect to receive benefits in the form of a single-life annuity and are at least 65 years old at the time of retirement or plan termination, whichever comes later. For other annuitants or for those who elect to receive benefits in some form other than a single-life annuity, the corresponding ceilings are actuarially adjusted downward.

Whether a particular participant's accumulated plan benefits would be paid should the Plan terminate at some future time will depend on the sufficiency of the Plan's net assets to provide for accumulated benefit obligations at that time and may also depend on the financial condition of the Plan sponsor and the level of benefits guaranteed by the PBGC.

NOTE 7 - PLAN REGULATORY MATTERS

Plan tax status

The Plan received a favorable tax determination letter from the Internal Revenue Service ("IRS") dated February 7, 2017, which states that the Plan is qualified under Section 401(a) of the IRC and therefore, the related trust is exempt from federal income taxes. Although the Plan that the IRS reviewed in issuing its most recent determination letter was since amended, the Plan administrator believes that the Plan is designed and being operated in compliance with the applicable requirements of the IRC to maintain its qualified status. Accordingly, income taxes are not provided for in the accompanying financial statements.

U.S. GAAP requires Plan management to evaluate tax positions taken by the Plan and recognize a tax liability (or asset) if the Plan has taken an uncertain position that more likely than not would not be sustained upon examination by the IRS. Plan management has analyzed the tax positions taken by the Plan, and has concluded that as of September 30, 2018 and 2017, there are no uncertain positions taken or expected to be taken that would require recognition of a liability (or asset) or disclosure in the financial statements.

The Plan is subject to routine audits by taxing jurisdictions. By written notice dated September 18, 2018, the Plan sponsor was notified by the IRS of an impending examination of the Plan. The Plan is currently under examination by the IRS for the Plan year ended September 30, 2016. Plan management believes the Plan is no longer subject to income tax examinations for the tax periods prior to 2015.

Voluntary Correction Program

During the year ended September 30, 2016, the Company determined that certain participants were not receiving a required minimum distribution from the Plan. Valvoline filed a Voluntary Correction Program ("VCP") submission with the IRS in January 2017, which further detailed this matter and Valvoline's plan for correction. Valvoline received approval from the IRS for the VCP correction methodology on June 28, 2017 and corrections were completed by March 2018.

Department of Labor examination

The Plan is subject to periodic compliance reviews. The Plan sponsor received written notification dated October 5, 2017 from the Department of Labor ("DOL") advising that the Plan had been scheduled for examination pursuant to ERISA by the DOL. The Plan sponsor was informed the examination will consist primarily of an on-site examination of Plan records and interviews of Plan officials. The Plan is currently under examination by the DOL for the period beginning September 1, 2016 through present.

NOTE 8 - COMMITMENTS

As of September 30, 2018 and 2017, the Trust had subscription agreements to invest in various private equity funds of \$35,000 thousand. Capital call commitments as of September 30, 2018 and 2017 totaled \$29,050 thousand. There were no capital calls made during the years ended September 30, 2018 and 2017.

NOTE 9 - SUBSEQUENT EVENTS

Change in Plan Trustee

On October 1, 2018, the Plan Trustee changed from The Bank of New York Mellon to Northern Trust.

Prohibited transaction

During the Plan year ending September 30, 2019, non-qualified pension plan payments of \$3,934 thousand were made from the Trust rather than the trust established by the Company for non-qualified pension plan payments. The use of Trust assets for non-qualified pension plan payments is deemed a loan to a party in interest and a non-exempt prohibited transaction under ERISA. Valvoline corrected its payments process and reimbursed the Trust for these payments, including lost earnings, in April 2019.

Plan Name	Ashland Hercules Pension Plan
Plan Sponsor EIN	61-1782197
ERISA Plan #	001
Plan Year Ending	9/30/2018

The required attachment marked with an "X" in the Attachment column is included within the "Signed Schedule MB or Schedule SB" attachment to Schedule SB location which consists of the entire Schedule SB and its attachments.

Form / Schedule	Line#	Description	Attachment Title (if different from Description)	Attach- ment
5500 Sch. SB	None	Statement by Enrolled Actuary		
5500 Sch. SB	Line 27	Actuarial Information Based on Pre-PPA Funding Rules		
5500 Sch. SB	Line E	Information for Each Individual Employer		
5500 Sch. SB	Line 4	Additional Information for Plans in At-Risk Status		
5500 Sch. SB	Line 7	Explanation of Discrepancy in Prior Year Funding Standard Carryover Balance or Prefunding		
5500 Sch. SB	Line 8	Late Election to Apply Balances to Quarterly Installments		
5500 Sch. SB	Line 9	Explanation of Credit Balance Discrepancy		
5500 Sch. SB	Line 18	Contributions Made to the Plan for the Plan Year		
5500 Sch. SB	Line 19	Discounted Employer Contributions		
5500 Sch. SB	Line 20c	Liquidity Requirement Certification		
5500 Sch. SB	Line 22	Description of Weighted Average Retirement Age		X
5500 Sch. SB	Line 23	Information on Use of Multiple Mortality Tables		
5500 Sch. SB	Line 23	Information on Use of Substitute Mortality Tables		
5500 Sch. SB	Part V	Statement of Actuarial Assumptions/Methods		X
5500 Sch. SB	Part V	Summary of Plan Provisions		X
5500 Sch. SB	Line 24	Change in Actuarial Assumptions		X
5500 Sch. SB	Line 25	Change in Method		
5500 Sch. SB	Line 26	Schedule of Active Participant Data		X
5500 Sch. SB	Line 27	Balances Subject to Binding Agreement with PBGC		
5500 Sch. SB	Line 27	Alternative 17-Year Funding Schedule of Airlines		
5500 Sch. SB	Line 32	Schedule of Amortization Bases		X
5500 Sch. SB	Line 15	Other Attachment [Enter Description]	Line 15 Val AFTAP Differences	X

Plan Name	Ashland Hercules Pension Plan
Plan Sponsor EIN	61-1782197
ERISA Plan #	001
Plan Year Ending	9/30/2018

The required attachment marked with an "X" in the Attachment column is included within the "Signed Schedule MB or Schedule SB" attachment to Schedule SB location which consists of the entire Schedule SB and its attachments.

Form / Schedule	Line#	Description	Attachment Title (if different from Description)	Attach- ment
5500 Sch. SB	None	Statement by Enrolled Actuary		
5500 Sch. SB	Line 27	Actuarial Information Based on Pre-PPA Funding Rules		
5500 Sch. SB	Line E	Information for Each Individual Employer		
5500 Sch. SB	Line 4	Additional Information for Plans in At-Risk Status		
5500 Sch. SB	Line 7	Explanation of Discrepancy in Prior Year Funding Standard Carryover Balance or Prefunding		
5500 Sch. SB	Line 8	Late Election to Apply Balances to Quarterly Installments		
5500 Sch. SB	Line 9	Explanation of Credit Balance Discrepancy		
5500 Sch. SB	Line 18	Contributions Made to the Plan for the Plan Year		
5500 Sch. SB	Line 19	Discounted Employer Contributions		
5500 Sch. SB	Line 20c	Liquidity Requirement Certification		
5500 Sch. SB	Line 22	Description of Weighted Average Retirement Age		X
5500 Sch. SB	Line 23	Information on Use of Multiple Mortality Tables		
5500 Sch. SB	Line 23	Information on Use of Substitute Mortality Tables		
5500 Sch. SB	Part V	Statement of Actuarial Assumptions/Methods		X
5500 Sch. SB	Part V	Summary of Plan Provisions		X
5500 Sch. SB	Line 24	Change in Actuarial Assumptions		X
5500 Sch. SB	Line 25	Change in Method		
5500 Sch. SB	Line 26	Schedule of Active Participant Data		X
5500 Sch. SB	Line 27	Balances Subject to Binding Agreement with PBGC		
5500 Sch. SB	Line 27	Alternative 17-Year Funding Schedule of Airlines		
5500 Sch. SB	Line 32	Schedule of Amortization Bases		X
5500 Sch. SB	Line 15	Other Attachment [Enter Description]	Line 15 Val AFTAP Differences	X

SCHEDULE SB (Form 5500) <small>Department of the Treasury Internal Revenue Service</small> <hr/> <small>Department of Labor Employee Benefits Security Administration</small> <hr/> <small>Pension Benefit Guaranty Corporation</small>	Single-Employer Defined Benefit Plan Actuarial Information This schedule is required to be filed under section 104 of the Employee Retirement Income Security Act of 1974 (ERISA) and section 6059 of the Internal Revenue Code (the Code). ► File as an attachment to Form 5500 or 5500-SF.	OMB No. 1210-0110 2017 This Form is Open to Public Inspection
---	--	---

For calendar plan year 2017 or fiscal plan year beginning 10/01/2017 and ending 09/30/2018

► **Round off amounts to nearest dollar.**

► **Caution:** A penalty of \$1,000 will be assessed for late filing of this report unless reasonable cause is established.

A Name of plan ASHLAND HERCULES PENSION PLAN	B Three-digit plan number (PN) ►	001
C Plan sponsor's name as shown on line 2a of Form 5500 or 5500-SF VALVOLINE LLC	D Employer Identification Number (EIN) 61-1782197	
E Type of plan: ☒ Single ☐ Multiple-A ☐ Multiple-B ☐ Other		
F Prior year plan size: ☐ 100 or fewer ☐ 101-500 ☒ More than 500		

Part I Basic Information

1 Enter the valuation date: Month <u>10</u> Day <u>01</u> Year <u>2017</u>			
2 Assets:			
a Market value.....	2a	2,023,394,965	
b Actuarial value.....	2b	1,979,188,341	
3 Funding target/participant count breakdown	(1) Number of participants	(2) Vested Funding Target	(3) Total Funding Target
a For retired participants and beneficiaries receiving payment.....	5,327	1,155,282,289	1,155,282,289
b For terminated vested participants.....	10,387	496,382,296	496,382,296
c For active participants.....	906	83,649,193	86,954,103
d Total.....	16,620	1,735,313,778	1,738,618,688
4 If the plan is in at-risk status, check the box and complete lines (a) and (b)..... ☐			
a Funding target disregarding prescribed at-risk assumptions.....	4a		
b Funding target reflecting at-risk assumptions, but disregarding transition rule for plans that have been in at-risk status for fewer than five consecutive years and disregarding loading factor.....	4b		
5 Effective interest rate.....	5	5.82%	
6 Target normal cost.....	6	7,263,433	

Statement by Enrolled Actuary

To the best of my knowledge, the information supplied in this schedule and accompanying schedules, statements and attachments, if any, is complete and accurate. Each prescribed assumption was applied in accordance with applicable law and regulations. In my opinion, each other assumption is reasonable (taking into account the experience of the plan and reasonable expectations) and such other assumptions, in combination, offer my best estimate of anticipated experience under the plan.

SIGN HERE	<div style="font-family: cursive; font-size: 1.2em; color: blue;">DENNIS STONE DLS</div>	<div style="font-size: 1.5em; color: blue;">6/26/2019</div>
	Signature of actuary	Date
DENNIS L STONE, FSA		1703271
Type or print name of actuary		Most recent enrollment number
		502-561-4500
Firm name		Telephone number (including area code)
400 West Market Street		
LOUISVILLE	KY	40202-3415
Address of the firm		

If the actuary has not fully reflected any regulation or ruling promulgated under the statute in completing this schedule, check the box and see instructions ☐

For Paperwork Reduction Act Notice, see the Instructions for Form 5500 or 5500-SF.

Schedule SB (Form 5500) 2017

Part II	Beginning of Year Carryover and Prefunding Balances	(a) Carryover balance	(b) Prefunding balance
7	Balance at beginning of prior year after applicable adjustments (line 13 from prior year).....	0	425,692,111
8	Portion elected for use to offset prior year's funding requirement (line 35 from prior year)		55,420,749
9	Amount remaining (line 7 minus line 8).....	0	370,271,362
10	Interest on line 9 using prior year's actual return of <u>7.35%</u>	0	27,214,946
1	Prior year's excess contributions to be added to prefunding balance:		
a	Present value of excess contributions (line 38a from prior year).....		341,780,298
b(1)	Interest on the excess, if any, of line 38a over line 38b from prior year Schedule SB, using prior year's effective interest rate of <u>5.98%</u>		17,124,301
b(2)	Interest on line 38b from prior year Schedule SB, using prior year's actual return		4,073,425
c	Total available at beginning of current plan year to add to prefunding balance.....		362,978,024
d	Portion of (c) to be added to prefunding balance.....		362,978,024
2	Other reductions in balances due to elections or deemed elections		190,000,000
3	Balance at beginning of current year (line 9 + line 10 + line 11d – line 12).....	0	570,464,332

14	Funding target attainment percentage	14	81.02%
15	Adjusted funding target attainment percentage.....	15	108.93%
16	Prior year's funding percentage for purposes of determining whether carryover/prefunding balances may be used to reduce current year's funding requirement	16	82.27%
17	If the current value of the assets of the plan is less than 70 percent of the funding target, enter such percentage.	17	%

18 Contributions made to the plan for the plan year by employer(s) and employees:						
(a) Date (MM-DD-YYYY)	(b) Amount paid by employer(s)	(c) Amount paid by employees	(a) Date (MM-DD-YYYY)	(b) Amount paid by employer(s)	(c) Amount paid by employees	
			Totals ►	18(b)	0	18(c) 0

a Contributions allocated toward unpaid minimum required contributions from prior years.....	19a	0
b Contributions made to avoid restrictions adjusted to valuation date	19b	0
c Contributions allocated toward minimum required contribution for current year adjusted to valuation date.....	19c	0

(1) 1st	(2) 2nd	(3) 3rd	(4) 4th
0	0	0	0

Part V Assumptions Used to Determine Funding Target and Target Normal Cost

21 Discount rate:			
a Segment rates:	1st segment: 4.16 %	2nd segment: 5.72 %	3rd segment: 6.48 %
			☐ N/A, full yield curve used
b Applicable month (enter code).....			21b 4
22 Weighted average retirement age			22 62
23 Mortality table(s) (see instructions) ☐ Prescribed - combined ☒ Prescribed - separate ☐ Substitute			

Part VI Miscellaneous Items

24 Has a change been made in the non-prescribed actuarial assumptions for the current plan year? If "Yes," see instructions regarding required attachment.		☒ Yes ☐ No
25 Has a method change been made for the current plan year? If "Yes," see instructions regarding required attachment.		☐ Yes ☒ No
26 Is the plan required to provide a Schedule of Active Participants? If "Yes," see instructions regarding required attachment.		☒ Yes ☐ No
27 If the plan is subject to alternative funding rules, enter applicable code and see instructions regarding attachment	27	

Part VII Reconciliation of Unpaid Minimum Required Contributions For Prior Years

28 Unpaid minimum required contributions for all prior years	28	0
29 Discounted employer contributions allocated toward unpaid minimum required contributions from prior years (line 19a).....	29	0
30 Remaining amount of unpaid minimum required contributions (line 28 minus line 29)	30	0

Part VIII Minimum Required Contribution For Current Year

31 Target normal cost and excess assets (see instructions):												
a Target normal cost (line 6).....	31a	7,263,433										
b Excess assets, if applicable, but not greater than line 31a	31b	0										
32 Amortization installments:	<table border="1"> <thead> <tr> <th></th> <th>Outstanding Balance</th> <th>Installment</th> </tr> </thead> <tbody> <tr> <td>a Net shortfall amortization installment.....</td> <td>329,894,679</td> <td>71,159,933</td> </tr> <tr> <td>b Waiver amortization installment</td> <td></td> <td>0</td> </tr> </tbody> </table>				Outstanding Balance	Installment	a Net shortfall amortization installment.....	329,894,679	71,159,933	b Waiver amortization installment		0
	Outstanding Balance	Installment										
a Net shortfall amortization installment.....	329,894,679	71,159,933										
b Waiver amortization installment		0										
33 If a waiver has been approved for this plan year, enter the date of the ruling letter granting the approval (Month _____ Day _____ Year _____) and the waived amount	33											
34 Total funding requirement before reflecting carryover/prefunding balances (lines 31a - 31b + 32a + 32b - 33)....	34	78,423,366										
		Carryover balance	Prefunding balance									
35 Balances elected for use to offset funding requirement.....			Total balance									
		78,513,404	78,513,404									
36 Additional cash requirement (line 34 minus line 35).....	36	0										
37 Contributions allocated toward minimum required contribution for current year adjusted to valuation date (line 19c).....	37	0										
38 Present value of excess contributions for current year (see instructions)												
a Total (excess, if any, of line 37 over line 36)	38a	0										
b Portion included in line 38a attributable to use of prefunding and funding standard carryover balances	38b											
39 Unpaid minimum required contribution for current year (excess, if any, of line 36 over line 37).....	39	0										
40 Unpaid minimum required contributions for all years	40	0										

Part IX Pension Funding Relief Under Pension Relief Act of 2010 (See Instructions)

41 If an election was made to use PRA 2010 funding relief for this plan:	
a Schedule elected	☐ 2 plus 7 years ☐ 15 years
b Eligible plan year(s) for which the election in line 41a was made	☐ 2008 ☐ 2009 ☐ 2010 ☐ 2011
42 Amount of acceleration adjustment	42
43 Excess installment acceleration amount to be carried over to future plan years	43

**SCHEDULE SB, LINE 15 – RECONCILIATION OF DIFFERENCE
BETWEEN VALUATION RESULTS USED TO CALCULATED AFTAP**

The AFTAP shown in Schedule SB, Line 15 of 108.93% is derived as follows:

- 1) Actuarial value of plan assets as of October 1, 2017 (line 2b) 1,979,188,341
- 2) Funding Target as of October 1, 2017 (Line 3d) 1,738,618,688
- 3) Annuity purchases for non-highly compensated employees in 2015 and 2016 plan years 952,431,690
- 4) AFTAP of 108.93%: $[(1) + (3)] / [(2) + (3)]$

SCHEDULE SB, LINE 22 — DESCRIPTION OF WEIGHTED AVERAGE RETIREMENT AGE

Each employee is assumed to retire in accordance with the applicable attached table of retirement rates. The proportion of employees expected to retire at each potential retirement age is shown in each applicable table. The average retirement age for the plan as a whole is 62.

Retirement Rates for Affiliates active as of 6/30/2003 with 10+ years of service on that date

(1) Age	(2) Number of Lives	(3) Probability of Retirement	(4) Expected Number of Retirees	(5) = (1) x (3)
55	1,000,000	10%	100,000	5,500,000
56	900,000	10%	90,000	5,040,000
57	810,000	10%	81,000	4,617,000
58	729,000	10%	72,900	4,228,200
59	656,100	10%	65,610	3,870,990
60	590,490	20%	118,098	7,085,880
61	472,392	20%	94,478	5,763,182
62	377,914	30%	113,374	7,029,193
63	264,540	20%	52,908	3,333,198
64	211,632	20%	42,326	2,708,885
65	169,305	60%	101,583	6,602,906
66	67,722	30%	20,317	1,340,898
67	47,405	30%	14,222	952,850
68	33,184	30%	9,955	676,950
69	23,229	30%	6,969	480,834
70	16,260	100%	16,260	1,138,206
			1,000,000	60,369,172
Wtd. Avg. Retirement Age = sum of column (5) ÷ sum of column (4) =				60.37

SCHEDULE SB, LINE 22 — DESCRIPTION OF WEIGHTED AVERAGE RETIREMENT AGE**Retirement Rates for Affiliates active on 6/30/2003 with less than 10 years of service on that date**

(1)	(2)	(3)	(4)	(5)
Age	Number of Lives	Probability of Retirement	Expected Number of Retirees	= (1) x (3)
55	1,000,000	5%	50,000	2,750,000
56	950,000	5%	47,500	2,660,000
57	902,500	5%	45,125	2,572,125
58	857,375	5%	42,869	2,486,388
59	814,506	5%	40,725	2,402,793
60	773,781	7%	54,165	3,249,880
61	719,616	7%	50,373	3,072,761
62	669,243	15%	100,386	6,223,961
63	568,857	15%	85,328	5,375,695
64	483,528	15%	72,529	4,641,870
65	410,999	30%	123,300	8,014,479
66	287,699	30%	86,310	5,696,445
67	201,389	30%	60,417	4,047,929
68	140,973	30%	42,292	2,875,842
69	98,681	30%	29,604	2,042,693
70	69,077	100%	69,077	4,835,361
			1,000,000	62,948,224
Wtd. Avg. Retirement Age = sum of column (5) ÷ sum of column (4) =				62.95

SCHEDULE SB, LINE 22 — DESCRIPTION OF WEIGHTED AVERAGE RETIREMENT AGE**Retirement Rates for Affiliates members hired after 6/30/2003**

(1) Age	(2) Number of Lives	(3) Probability of Retirement	(4) Expected Number of Retirees	(5) = (1) x (3)
55	1,000,000	15%	150,000	8,250,000
56	850,000	15%	127,500	7,140,000
57	722,500	15%	108,375	6,177,375
58	614,125	15%	92,119	5,342,888
59	522,006	15%	78,301	4,619,755
60	443,705	15%	66,556	3,993,348
61	377,150	20%	75,430	4,601,224
62	301,720	35%	105,602	6,547,316
63	196,118	35%	68,641	4,324,396
64	127,477	35%	44,617	2,855,474
65	82,860	70%	58,002	3,770,119
66	24,858	30%	7,457	492,187
67	17,401	30%	5,220	349,751
68	12,180	30%	3,654	248,480
69	8,526	30%	2,558	176,494
70	5,968	100%	5,968	417,787
			1,000,000	59,306,593

Wtd. Avg. Retirement Age = sum of column (5) ÷ sum of column (4) =

59.31

SCHEDULE SB, LINE 22 — DESCRIPTION OF WEIGHTED AVERAGE RETIREMENT AGE**Retirement Rates for Hercules members**

(1) Age	(2) Number of Lives	(3) Probability of Retirement	(4) Expected Number of Retirees	(5) = (1) x (3)
50	1,000,000	5%	50,000	2,500,000
51	950,000	5%	47,500	2,422,500
52	902,500	5%	45,125	2,346,500
53	857,375	5%	42,869	2,272,044
54	814,506	5%	40,725	2,199,167
55	773,781	10%	77,378	4,255,795
56	696,403	15%	104,460	5,849,784
57	591,942	15%	88,791	5,061,108
58	503,151	15%	75,473	4,377,414
59	427,678	17%	72,705	4,289,614
60	354,973	17%	60,345	3,620,725
61	294,628	17%	50,087	3,055,289
62	244,541	22%	53,799	3,335,539
63	190,742	22%	41,963	2,643,683
64	148,779	25%	37,195	2,380,459
65	111,584	25%	27,896	1,813,241
66	83,688	50%	41,844	2,761,705
67	41,844	50%	20,922	1,401,774
68	20,922	50%	10,461	711,348
69	10,461	50%	5,231	360,905
70	5,231	100%	5,231	366,135

1,000,000 58,024,729

Wtd. Avg. Retirement Age = sum of column (5) ÷ sum of column (4) = 58.02

Overall Weighted Average Retirement Age for Entire Plan = 62

**SCHEDULE SB, LINE 24 – CHANGES IN NON-PRESCRIBED
ACTUARIAL ASSUMPTIONS**

- The expected investment return assumption decreased from 7.00% for the 2016 plan year to 4.55% for the 2017 plan year.
- The expected expenses decreased from \$17,490,652 to \$7,263,433.

SCHEDULE SB, LINE 26 – SCHEDULE OF ACTIVE PARTICIPANT DATA**DISTRIBUTION OF ACTIVE PARTICIPANTS AS OF OCTOBER 1, 2017***Ashland Hercules – Annuity Benefits*

ATTAINED AGE	YEARS OF CREDITED SERVICE										TOTAL
	UNDER 1	1–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40 & UP	
Under 25											
25–29											
30–34											
35–39											
40–44		1		1	11	5					18
45–49					5	40	21				66
						29,317	29,641				
50–54			1	3	3	18	60	22			107
							39,594	37,678			
55–59				1	2	25	41	63	2		134
						29,855	34,631	45,874			
60–64				1	6	15	19	16	27	1	85
									27,058		
65–69				2		4	4		3	2	15
70 & up						1					1
Total		1	1	8	27	108	145	101	32	3	426

In each cell, the top number is the count of active participants for each age/service combination and the bottom number is the average annual accrued benefit. The average benefit is not shown for cells with fewer than 20 participants.

SCHEDULE SB, LINE 26 – SCHEDULE OF ACTIVE PARTICIPANT DATA**DISTRIBUTION OF ACTIVE CASH BALANCE PARTICIPANTS AS OF
OCTOBER 1, 2017***Ashland Hercules – RGA Benefits*

ATTAINED AGE	YEARS OF CREDITED SERVICE										TOTAL
	UNDER 1	1–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40 & UP	
Under 25											
25–29											
30–34			15	8							23
35–39			31	62							93
			5,162	16,164							
40–44			17	68							85
				27,946							
45–49			14	82							96
				40,480							
50–54	1		15	56							72
				50,621							
55–59			12	59		2					73
				58,941							
60–64			6	24							30
				64,882							
65–69			2	5		1					8
70 & up											
Total	1		112	364		3					480

In each cell, the top number is the count of active participants for each age/service combination and the bottom number is the average cash balance account. The average cash balance account is not shown for cells with fewer than 20 participants.

SCHEDULE SB, LINE 32 – SCHEDULE OF AMORTIZATION BASES**SHORTFALL AMORTIZATION CHARGE**

The total shortfall amortization charge is the sum of the individual shortfall amortization installments for each plan year since the IRC Section 430 changes made by the Pension Protection Act of 2006 (PPA) took effect for the plan. Although an individual shortfall amortization installment can be negative, the combined shortfall amortization charge cannot be less than \$0.

SHORTFALL BASES			
YEAR ESTABLISHED	OUTSTANDING BALANCE	YEARS REMAINING	2017 INSTALLMENT
2013	\$ 38,153,805	3	\$ 13,239,666
2014	(35,264,042)	4	(9,362,077)
2015	204,563,016	5	44,313,678
2016	130,768,270	6	24,335,953
2017	(8,326,370)	7	(1,367,287)
Total	\$ 329,894,679		\$ 71,159,933

SCHEDULE SB, PART V – SUMMARY OF ACTUARIAL ASSUMPTIONS/METHODS
ACTUARIAL ASSUMPTIONS

DISCOUNT RATE SPONSOR ELECTIONS		
• Segment rates or full yield curve	Segment	
• Look-back months	4	
	<u>Stabilized</u>	<u>Nonstabilized</u>
• First 5 years	4.16%	1.71%
• Next 15 years	5.72%	3.83%
• Over 20 years	6.48%	4.75%
Mortality sponsor elections		
• Healthy participants	Section 430(h)(3) prescribed separate static annuitant and non-annuitant mortality tables. These tables are based on the RP-2000 mortality tables projected with mortality improvement to the valuation year plus 7 and 15 years based on Scale AA.	
Other economic assumptions		
• Salary increases	Not applicable	
• Social Security wage base	Not applicable	
• Inflation	Not applicable	
• Expected investment return	4.55% for 2017 7.00% for 2016	
• Expenses	Expected expenses equal actual prior year plan administrative expenses paid from the trust excluding actual PBGC premiums plus estimated current year PBGC premiums.	
• Cash Balance Interest Credit	4.25% compounded annually.	
• LESOP Stock Appreciation	Not applicable	
• LESOP Share Price	Not applicable	
• LESOP Conversion rate	5.40% and section 430(h)(3) prescribed mortality	

SCHEDULE SB, PART V – SUMMARY OF ACTUARIAL ASSUMPTIONS/METHODS

DEMOGRAPHIC ASSUMPTIONS		
• Withdrawal-Affiliates	Age at Beginning of Year	Turnover Rate*
	22	0.160
	27	0.140
	32	0.115
	37	0.090
	42	0.065
	47	0.060
	52	0.055
	57	0.050
	62	0.045
<i>*Rates linearly interpolated between above ages.</i>		
• Withdrawal-Hercules	Experience rates – sample rates as follows:	
	Age	Turnover Rate
	25	0.100
	30	0.100
	35	0.100
	40	0.100
	45	0.100
	50	0.070
	55	0.050
	60	0.050
• Disability incidence	Experience rates for Hercules and Affiliates:	
	Age	Disability Rate
	20	0.0012
	30	0.0012
	35	0.0013
	40	0.0015
	45	0.0020
	50	0.0036
	55	0.0068

SCHEDULE SB, PART V – SUMMARY OF ACTUARIAL ASSUMPTIONS/METHODS

• Retirement age - Affiliates		Active on 6/30/03 with 10+ yrs of service	Active on 6/30/03 under 10 yrs of service	Hired or rehired after 6/30/03
	Age			
	54 and under	0.05*	0.00	0.00
	55-59	0.10	0.05	0.15
	60	0.20	0.07	0.15
	61	0.20	0.07	0.20
	62	0.30	0.15	0.35
	63-64	0.20	0.15	0.35
	65	0.60	0.30	0.70
	66-69	0.30	0.30	0.30
70+	1.00	1.00	1.00	
*If meets rule of 80 prior to age 55 then 0.05 rate will be applied at each age up to age 55.				
• Retirement age - Hercules	Age	Retirement rate		
	50-54	0.05		
	55	0.10		
	56-58	0.15		
	59-61	0.17		
	62-63	0.22		
	64-65	0.25		
	66-69	0.50		
	70	1.00		
• Benefit commencement age for current and future vested				
– Affiliates	Age 62 with the following exceptions: RGA participants: Age 55			
– Hercules	Age 62			
• Spouse assumptions	Male participants	Female participants		
– Percentage married	80%	80% - Affiliates 50% - Hercules		
– Spouse age difference	3 years younger	3 years older		

SCHEDULE SB, PART V – SUMMARY OF ACTUARIAL ASSUMPTIONS/METHODS

Form of payment	
• Active retirements	Grandfathered Affiliates participants and Hercules not eligible for 51% lump sum: 55% joint & survivor annuity. RGA participants and Hercules eligible for 51% lump sum: 100% of available lump sum.
• Future disability	Grandfathered participants and all Hercules: 100% single life annuity. RGA participants: 100% lump sum.
• Future deaths	Grandfathered participants and all Hercules: 100% single life annuity. RGA participants: 100% lump sum.
• Future vested deferred	Grandfathered participants and all Hercules: 55% joint & survivor annuity. RGA participants: 100% lump sum.
• Current vested deferred	Grandfathered participants and Hercules: 55% joint & survivor annuity. RGA participants: 100% lump sum.
Lump sum conversion	5.40% and 417(e) applicable mortality
Unpredictable contingent event assumptions	Not applicable
Additional at-risk assumptions	N/A

SCHEDULE SB, PART V – SUMMARY OF ACTUARIAL ASSUMPTIONS/METHODS

ACTUARIAL METHODS

Asset Methods

The asset valuation method is an average of the adjusted market value for each year during the last 2 years preceding the valuation date. The adjusted market value is the market value at each determination date adjusted to the valuation date based on actual cash flows and expected interest at the lesser of the expected rate of return and the third segment rate. This amount is adjusted to be no greater than 110 percent and no less than 90 percent of the fair market value, as defined in IRC Section 430.

A characteristic of this asset method is that, over time, it is slightly more likely to produce an actuarial value of assets that is less than the market value of assets than an actuarial value that is greater than the market value.

Participant Methods

Participants or former participants are included or excluded from the valuation as described below:

- **Participants included:** The plan sponsor provides us with data on all participants as of the valuation date.
- **Participants excluded:** No actuarial liability is included for nonvested participants who terminated prior to the valuation date. For this purpose, participants with a break in service on the valuation date are treated as terminated participants.
- **Insurance contracts:** The plan does not have any insurance contracts.

Minimum Funding Methods

The funding target for minimum funding calculations is computed using the traditional unit credit method of funding. The objective under this method is to fund each participant's benefits under the plan as they accrue. Thus, the total pension to which each participant is expected to become entitled at retirement is broken down into units, each associated with a year of past or future credited service.

A detailed description of the calculation follows:

- The plan's valuation date is the beginning of the plan year.
- An individual's **funding target** is the present value of future benefits based on credited service and average pay as of the beginning of the plan year, and an individual's **target normal cost** is the present value of the benefit expected to accrue in the plan year. If multiple decrements are used, the funding target and the target normal cost for an individual is the sum of the component funding targets and target normal costs associated with the various anticipated separation dates.

SCHEDULE SB, PART V – SUMMARY OF ACTUARIAL ASSUMPTIONS/METHODS

- The plan's **target normal cost** is the sum of the individual target normal costs, and the plan's **funding target** is the sum of the individual funding targets for all participants under the plan.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS**SUMMARY OF MAJOR PLAN PROVISIONS***Affiliates Members*

Effective date and plan year	Original plan: March 1, 1951 Restated plan: July 1, 2003
Status of the plan	The plan has no future benefit accruals, and no new entrants are allowed into the plan and RGA cash balance accruals have been frozen.
Significant events that occurred during the year	The plan purchased an annuity contract in September 2017 and transferred liabilities for certain retirees to Principal.
DEFINITIONS	
• Participation	One year of service and age 21. Effective January 1, 2011 no new entrants are allowed into the plan.
• Employee contributions	None
• Employer contributions	Entire cost of the Plan
• Credited service	Continuous service from most recent date of hire
• Final average compensation	Average of highest 3 years earnings during last 10 years of service, limited as required by the Tax Reform Act of 1986. Effective January 1, 2011, the final average compensation began transitioning from a 3-year average to a 4-year average, and effective January 1, 2016, the final average compensation began transitioning from a 4-year average to a 5-year average for grandfathered annuity participants.
NORMAL RETIREMENT	
• Eligibility	Age 65
• Benefit	<p>For members with 10 or more years of service on July 1, 2003 (referred to as Annuity Participants):</p> <p>Greatest of (1) and (2) offset by annuity purchased as of October 1, 1986 and the benefit attributable to 50% of the LESOP balance</p> <ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> A. Prior to 4/1/1976 – Benefit accrued to 3/31/1976 in accordance with terms of plan in effect on that date B. Beginning 4/1/1976 through 9/30/1989 - 1.50% of annual compensation under \$12,000 plus 2.25% of annual compensation over \$12,000. C. Beginning 10/1/1989 – no further accruals under this formula. 2. 1.08% of final average compensation up to \$10,700 plus 1.50% of such average compensation in excess of \$10,700 multiplied by years of credited service (maximum of 35). <p>Effective September 30, 2016, accrued benefits were frozen.</p>

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

For members with less than 10 years of service on July 1, 2003 (referred to as RGA Participants), cash balance benefit formula defined as follows:

1. Opening Balance – Present value of accrued benefit as of 6/30/2003 (present value based on 5.5% interest and GATT 2003 mortality).
2. Interest Credits – Average of United States 1 year Treasury Constant Maturity Rates for August preceding the beginning of the plan year plus 1%, the rate shall never be less than 4% or more than 7%.
3. Contribution Credits – As determined from the following table:

Age + continuous service at end of plan year	Contribution credit
Less than 30	3%
30 – 39	4%
40 – 49	5%
50 – 59	6%
60 – 69	7%
70 – 79	9%
80 or more	11%

4. Additional transition credits for those age 45 or older on 6/30/2003 in accordance with the following table:

Age on June 30, 2003	Transition credit percentage
45 to 49	3%
50 to 54	4%
55 and Over	5%

The account balance is reduced for any applicable LESOP offset. Effective January, 2011, both contribution credits and transition credits are frozen, and only interest credits continue to accrue on cash balance accounts going forward for RGA participants.

EARLY RETIREMENT

- Eligibility

Eligible for early retirement if either:

5. Age 55 and 3 years of vesting service.
6. Age plus years of vesting service equal to 80 or more.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

<ul style="list-style-type: none"> Benefit 	<p>Annuity Participants receive a percentage of their accrued benefit as specified in the following table:</p> <table> <tr> <th>Retirement age</th><th>Percentage of accrued benefit</th></tr> <tr><td>50</td><td>46%</td></tr> <tr><td>51</td><td>51%</td></tr> <tr><td>52</td><td>56%</td></tr> <tr><td>53</td><td>62%</td></tr> <tr><td>54</td><td>68%</td></tr> <tr><td>55</td><td>75%</td></tr> <tr><td>56</td><td>80%</td></tr> <tr><td>57</td><td>84%</td></tr> <tr><td>58</td><td>88%</td></tr> <tr><td>59</td><td>91%</td></tr> <tr><td>60</td><td>94%</td></tr> <tr><td>61</td><td>97%</td></tr> <tr><td>62 or older</td><td>100%</td></tr> </table> <p>RGA Participants receive an early retirement benefit equal to the value of their RGA account less any LESOP offset.</p>	Retirement age	Percentage of accrued benefit	50	46%	51	51%	52	56%	53	62%	54	68%	55	75%	56	80%	57	84%	58	88%	59	91%	60	94%	61	97%	62 or older	100%
Retirement age	Percentage of accrued benefit																												
50	46%																												
51	51%																												
52	56%																												
53	62%																												
54	68%																												
55	75%																												
56	80%																												
57	84%																												
58	88%																												
59	91%																												
60	94%																												
61	97%																												
62 or older	100%																												
DEFERRED RETIREMENT BENEFIT																													
<ul style="list-style-type: none"> Benefit 	<p>Participants working past their Normal Retirement Date shall continue to accrue benefits up to their actual date of retirement.</p>																												
DEFERRED VESTED																													
<ul style="list-style-type: none"> Eligibility 	<p>Three or more years of vesting service</p>																												
<ul style="list-style-type: none"> Benefit 	<p>100% vested, reduced based on the following table:</p> <table> <tr> <th>Retirement age</th><th>Percentage of accrued benefit</th></tr> <tr><td>55</td><td>50%</td></tr> <tr><td>56</td><td>54%</td></tr> <tr><td>57</td><td>58%</td></tr> <tr><td>58</td><td>62%</td></tr> <tr><td>59</td><td>66%</td></tr> <tr><td>60</td><td>70%</td></tr> <tr><td>61</td><td>76%</td></tr> <tr><td>62</td><td>82%</td></tr> <tr><td>63</td><td>88%</td></tr> <tr><td>64</td><td>94%</td></tr> <tr><td>65</td><td>100%</td></tr> </table> <p>For terminations after September 30, 2016, reductions are the same as for Early Retirement.</p>	Retirement age	Percentage of accrued benefit	55	50%	56	54%	57	58%	58	62%	59	66%	60	70%	61	76%	62	82%	63	88%	64	94%	65	100%				
Retirement age	Percentage of accrued benefit																												
55	50%																												
56	54%																												
57	58%																												
58	62%																												
59	66%																												
60	70%																												
61	76%																												
62	82%																												
63	88%																												
64	94%																												
65	100%																												

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

DISABILITY	
• Eligibility	Total and permanent disability
• Benefit	Benefits continue to accrue until Normal Retirement Date. Future service benefits after disability will accrue based on the member's compensation rate on October 1 of the year prior to his disability.
PRE-RETIREMENT DEATH	
• Benefit	<p><u>Annuity Participants</u> – A member is eligible if vested and survived by a spouse. His spouse will receive a survivor annuity equal to 50% of the pension the Member would have received had he retired under the qualified Joint and Survivor option on his date of death.</p> <p><u>RGA Participants</u> – Value of RGA account reduced by any LESOP offset</p>
POST-RETIREMENT DEATH	
• Benefit	In accordance with annuity form elected by Member.
FORM OF BENEFITS	
• Automatic form for unmarried participants	Life annuity
• Automatic form for married participants	Joint and 50% Survivor annuity in amount actuarially equivalent to single life annuity.
• Optional forms	50%, 66-2/3%, 75% and 100% contingent annuities, life with 10 years guaranteed, and single life annuity with no guarantee. A lump sum option is also available for RGA participants.
• Optional form conversion factors	6% and GAM 1971 Male mortality, set back 5 years for the spouse
MISCELLANEOUS	
• Maximum compensation	The plan was frozen as of September 30, 2016.
• Maximum benefits	The plan was frozen as of September 30, 2016.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS*Hercules Members**Represented Employees of Heritage Hercules*

Effective date and plan year	Original plan: 1913 Restated plan: January 1, 2005
Status of the plan	The plan has no future benefit accruals and new employees are not eligible to participate in the plan.
Significant events that occurred during the year	The plan purchased an annuity contract in September 2017 and transferred liabilities for certain retirees to Principal.
DEFINITIONS	
• Participation	All regular full-time represented employees.
• Employee contributions	None
• Credited service	Continuous service from most recent date of hire.
• Pensionable earnings	Salary and wages including overtime, holidays, vacations, commissions and non-occupational and temporary occupational disability benefits.
• Final average earnings	Average of highest 3 years earnings during last 10 years of service, limited as required by the Tax Reform Act of 1986.
• Social security earnings base	Twelve times the 35-year average monthly compensation used under the Social Security Act to calculate a maximum unreduced primary Social Security benefit in the calendar year prior to the year in which retirement or termination occurs.
NORMAL RETIREMENT	
• Eligibility	Age 65

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

• Benefit

1. Except as noted below: 1.15% of final average earnings up to the Social Security earnings base plus 1.35% of final average earnings in excess of such base multiplied by years of service.
2. Bacchus wage employees:
From June 1, 1996 — \$33.75 per month for each year of service.
At no time shall the benefit be less than the benefit as described in (1) above, with earnings frozen as of October 31, 1986
3. McGregor wage employees:
From September 15, 1994 — \$23.00 per month for each year of service.
At no time shall the benefit be less than the benefit as described in (1) above, with both earnings and service frozen as of June 30, 1989.
McGregor employees age 55 and older as of July 1, 1989 will receive the benefit as described in (1) above.
4. Hattiesburg, Jefferson, MCW, Gibbstown, Savannah, Parlin Powerhouse, and Milwaukee employees:
The benefits available to non-represented participants covered by this plan. All employees who were represented participants in this plan on the effective date maintain rights to the benefits determined in accordance with their representation immediately preceding the effective date.

Location	Effective Date
Hattiesburg	January 1, 1995
Jefferson	January 1, 1995
MCW	July 1, 1996
Gibbstown	October 1, 1996
Savannah	July 1, 1998
Parlin Powerhouse	July 1, 1998
Milwaukee	November 11, 2000

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

EARLY RETIREMENT																							
<ul style="list-style-type: none">Eligibility	<p><u>Unreduced Benefits:</u> Eligibility for unreduced early retirement is as follows:</p> <table><thead><tr><th>Age</th><th>Service</th></tr></thead><tbody><tr><td>55</td><td>35</td></tr><tr><td>56</td><td>32</td></tr><tr><td>57</td><td>29</td></tr><tr><td>58</td><td>26</td></tr><tr><td>59</td><td>23</td></tr><tr><td>60</td><td>20</td></tr><tr><td>61</td><td>18</td></tr><tr><td>62</td><td>16</td></tr><tr><td>63</td><td>14</td></tr><tr><td>64</td><td>12</td></tr></tbody></table> <p><u>Reduced Benefits:</u> Eligibility for reduced early retirement benefits is age 50 and 10 years of service (except in cases of dishonesty, misconduct, etc.).</p>	Age	Service	55	35	56	32	57	29	58	26	59	23	60	20	61	18	62	16	63	14	64	12
Age	Service																						
55	35																						
56	32																						
57	29																						
58	26																						
59	23																						
60	20																						
61	18																						
62	16																						
63	14																						
64	12																						
<ul style="list-style-type: none">Benefit	<p><u>Unreduced Benefits:</u> As described in normal retirement benefits.</p> <p><u>Reduced Benefits:</u> Actuarial reduction (6% and 1971 TPF&C) from the earliest date that the employee would have been eligible for unreduced benefits.</p>																						
DEFERRED VESTED																							
<ul style="list-style-type: none">Eligibility	<p>5. Five years of service where one year of vesting service is granted by any anniversary computation period in which an employee receives compensation for any six months.</p> <p>6. Prior disability pensioner whose disability has terminated and who has not been offered suitable work.</p> <p>7. Attainment of age 65.</p>																						
<ul style="list-style-type: none">Benefit	Same as early retirement benefit																						
DISABILITY																							
<ul style="list-style-type: none">Eligibility	Ten years of service and unable to perform the employee's normal work.																						
<ul style="list-style-type: none">Benefit	<p>8. For employees receiving Social Security disability benefits, benefit as described in normal retirement benefits.</p> <p>9. For employees who fail to qualify or remain qualified for Social Security disability benefits, 1.15% of final average earnings multiplied by years of service or any other pension payable under this plan.</p>																						

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

PRE-RETIREMENT DEATH	
• Eligibility	Spousal or nonspousal beneficiaries of active participants who are vested and who have elected this coverage; also, spousal beneficiaries of vested terminated participants who have elected this coverage.
• Benefit	Benefit that would have been payable to beneficiary under the 50% contingent annuity option if the participant had elected retirement on his date of death (or if the participant had terminated employment on his date of death and commenced benefits on the earliest possible date). In addition, active employees who are eligible for retirement benefit may elect the 100% contingent annuity option.
• Cost of benefit	Eliminated as of September 15 th , 2015
POST-RETIREMENT DEATH	
None except as elected by optional forms of benefits.	
POSTPONED RETIREMENT	
• Eligibility	Employee option.
• Benefit	Benefit as described in normal retirement benefits based on earnings and service at actual retirement date.
FORM OF BENEFITS	
• Automatic form for unmarried participants	Life annuity
• Automatic form for married participants	50% joint and survivor annuity actuarially reduced.
• Optional forms	50%, 75% and 100% contingent annuities; also, Bacchus wage, Jefferson, Hattiesburg, Gibbstown, Milwaukee, Savannah, Parlin Powerhouse, and MCW employees and employees at the Parlin location may select a 51% lump sum combined with a 49% annuity.
• Optional form conversion factors	5% and 417(e) applicable mortality
MISCELLANEOUS	
• Maximum compensation	The plan was frozen as of September 30, 2016.
• Maximum benefits	The plan was frozen as of September 30, 2016.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS*Hercules Members**Non-Represented Employees of Heritage Hercules*

Effective date and plan year	Original plan: January 1, 2005
Status of the plan	The plan has no future benefit accruals and new employees are not eligible to participate in the plan.
Significant events that occurred during the year	The plan purchased an annuity contract in September 2017 and transferred liabilities for certain retirees to Principal.
DEFINITIONS	
<ul style="list-style-type: none"> Participation 	Any person not represented by a union, who is employed either at a location at which the Predecessor Plan was in effect or at a location to which this Plan has been extended by the Board. For represented employees participating in Schedule D (the career average pay formula) and for all non-represented employees, individuals hired on or after January 1, 2005 will not become participants in this plan.
<ul style="list-style-type: none"> Employee contributions 	None
<ul style="list-style-type: none"> Vesting service 	At least six months of Earnings are required for one year of vesting service. Prior service under Hercules Incorporated's Pension Plan is included.
<ul style="list-style-type: none"> Credited service 	Each month in which Earnings are accrued. The total months of Credited Service divided by 12 are the years of Credited Service, whether or not consecutive. Prior service under Hercules Incorporated's Pension Plan is included. For former employees of SP Microwave, Inc., no Credited Service is granted prior to January 1, 1968.
<ul style="list-style-type: none"> Pensionable earnings 	Salary or wages including overtime, holidays, vacations, commissions, sales incentives, MICP bonuses and non-occupational and temporary occupational disability benefits paid to an employee up to the first day of the calendar month following date of retirement or termination. Effective January 1, 2011, variable pay is added and overtime is excluded going forward.
<ul style="list-style-type: none"> Final average earnings 	Average monthly earnings for the highest five consecutive years during the last ten years of service, limited as required by the Tax Reform Act of 1986. Effective January 1, 2005, the averaging period of five years extends one additional month for each month that the individual is employed beyond January 1, 2005. (Note that the extended averaging period does not apply to the represented employees at MCW).
<ul style="list-style-type: none"> Social security integration point 	One-half of the Social Security tax base in effect for 12 months immediately prior to the effective date of retirement or termination month.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

NORMAL RETIREMENT																			
• Eligibility	Age 65																		
• Benefit	<p><u>Prospective Monthly Benefit</u>: 1.20% of Final Average Earnings up to the Social Security Integration Point plus 1.60% of Final Average Earnings in excess of such integration point multiplied by years and months of Credited Service.</p> <p><u>Predecessor Plan</u>: All participants who participated in the Predecessor Plan in effect on December 31, 1984 maintain rights to the benefits determined in accordance with such Plan.</p> <p><u>Former Employees of SP Microwave, Inc.</u>: The minimum benefit under this plan is the benefit accrued as of June 30, 1987 under the SP Microwave, Inc. Plan.</p> <p><u>Former Employees of Aqualon Company Pension Plan (Kenedy)</u>: The minimum benefit under this plan is the accrued benefit as of December 31, 1992 under the Aqualon Company Pension Plan (Kenedy).</p> <p>Effective September 30, 2016, accrued benefits were frozen</p>																		
EARLY RETIREMENT																			
• Eligibility	<p><u>Unreduced Benefits</u>: Eligibility: Attainment of age 62.</p> <p><u>Reduced Benefits</u>: Attainment of age 55 and completion of ten years of Service.</p>																		
• Benefit	<p><u>Unreduced Benefits</u>: As described in normal retirement benefits.</p> <p><u>Reduced Benefits</u>: As described in normal retirement benefits (Prospective Monthly Benefit), but reduced for each month by which the date of retirement precedes age 60, minimum of benefit based on Predecessor Plan. The reduction is equal to 150% divided by an individual's Service for each year prior to age 60. The maximum annual reduction is 5%. Effective January 1, 2011, the early retirement factors described above are replaced with the following early retirement factors:</p> <table> <tr> <th>Retirement age</th><th>Percentage of accrued benefit</th></tr> <tr> <td>55</td><td>75%</td></tr> <tr> <td>56</td><td>80%</td></tr> <tr> <td>57</td><td>84%</td></tr> <tr> <td>58</td><td>88%</td></tr> <tr> <td>59</td><td>91%</td></tr> <tr> <td>60</td><td>94%</td></tr> <tr> <td>61</td><td>97%</td></tr> <tr> <td>62 or older</td><td>100%</td></tr> </table> <p>This change in early retirement factors is being made using a "wear-away" approach, whereby the early retirement benefit determined after this change in reduction factors cannot be less than the early retirement benefit determined using the December 31, 2010 accrued benefit and the early retirement factors in effect prior to 2011.</p>	Retirement age	Percentage of accrued benefit	55	75%	56	80%	57	84%	58	88%	59	91%	60	94%	61	97%	62 or older	100%
Retirement age	Percentage of accrued benefit																		
55	75%																		
56	80%																		
57	84%																		
58	88%																		
59	91%																		
60	94%																		
61	97%																		
62 or older	100%																		

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

DEFERRED VESTED																									
• Eligibility	Five years of vesting service.																								
• Benefit	<p>As described in normal retirement. A participant may elect to receive payment of a vested benefit as early as age 55 by proper application. The benefit that would have been payable at age 65 will be actuarially reduced as described in the following table:</p> <table> <tr> <th>Retirement age</th><th>Percentage of accrued benefit</th></tr> <tr><td>55</td><td>50%</td></tr> <tr><td>56</td><td>54%</td></tr> <tr><td>57</td><td>58%</td></tr> <tr><td>58</td><td>62%</td></tr> <tr><td>59</td><td>66%</td></tr> <tr><td>60</td><td>70%</td></tr> <tr><td>61</td><td>76%</td></tr> <tr><td>62</td><td>82%</td></tr> <tr><td>63</td><td>88%</td></tr> <tr><td>64</td><td>94%</td></tr> <tr><td>65 or older</td><td>100%</td></tr> </table> <p>For terminations after September 30, 2016, the reductions are the same as for early retirement.</p>	Retirement age	Percentage of accrued benefit	55	50%	56	54%	57	58%	58	62%	59	66%	60	70%	61	76%	62	82%	63	88%	64	94%	65 or older	100%
Retirement age	Percentage of accrued benefit																								
55	50%																								
56	54%																								
57	58%																								
58	62%																								
59	66%																								
60	70%																								
61	76%																								
62	82%																								
63	88%																								
64	94%																								
65 or older	100%																								
DISABILITY																									
• Eligibility	Not applicable																								
• Benefit	None (continued service credit while receiving benefits under Company long-term disability plan).																								
PRE-RETIREMENT DEATH																									
• Eligibility	Spousal or non-spousal beneficiaries of active participants who are vested and who have elected this coverage; also, spousal beneficiaries of vested terminated participants who have elected this coverage.																								
• Benefit	Benefit that would have been payable to beneficiary under the 50% contingent annuity option if the participant had elected retirement on his date of death (or if the participant had terminated employment on his date of death and commenced benefits on the earliest possible date). In addition, active employees who are eligible for retirement benefit may elect the 100% contingent annuity option.																								
• Cost of benefit	Eliminated as of September 15 th , 2015																								
POST-RETIREMENT DEATH																									
None except as elected by optional forms of benefits.																									
POSTPONED RETIREMENT																									
• Eligibility	Employee option.																								

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

• Benefit	Benefit as described in normal retirement benefits based on earnings and service at actual retirement date.
FORM OF BENEFITS	
• Automatic form for unmarried participants	Life annuity
• Automatic form for married participants	50% joint and survivor annuity, actuarially reduced.
• Optional forms	50%, 75% and 100% joint and survivor annuities, 51% lump sum combined with a 49% annuity. As of January 1, 2005, the 51% lump sum is only applicable to benefits earned through the end of 2004.
• Optional form conversion factors	5% and 417(e) applicable mortality
JULY 1, 1993 PENSION ADJUSTMENT	For all pensioners and beneficiaries receiving benefits pursuant to a joint and survivor option who were receiving benefits as of April 1, 1993 (and in addition, all 1992 curtailed employees who were retirement eligible, even if they are not in payment status as of April 1, 1993) the pension benefits were increased as follows: 0.125% per month of retirement from January 1, 1985 through December 31, 1992. Minimum increase was equal to the greater of (i) \$20 per month of retirement or (ii) 3% of the pension benefit being paid. The increase is not payable to individuals (or beneficiaries) in pay status who started to receive benefits from status as vested terminated participants with a right to a deferred benefit.
MISCELLANEOUS	
• Maximum compensation	The plan was frozen as of September 30, 2016.
• Maximum benefits	The plan was frozen as of September 30, 2016.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS*Hercules Members**Heritage BetzDearborn Employees*

Key provisions	<p>Averaging period for pay of three years extends one additional month for each month that the individual is employed beyond January 1, 2005.</p> <p>The 51% lump sum provision is available to new retirees based on benefits earned through the end of 2004.</p> <p>Employees hired on or after January 1, 2005 do not become participants in the plan.</p>
Effective date and plan year	<p>Original plan: January 1, 1953. Merged into Hercules Pension Plan January 1, 1999.</p> <p>Restated plan: January 1, 2002</p>
Status of the plan	The plan has no future benefit accruals and new employees are not eligible to participate in the plan.
Significant events that occurred during the year	The plan purchased an annuity contract in September 2017 and transferred liabilities for certain retirees to Principal.
DEFINITIONS	
• Participation	January 1 or July 1 following attainment of age 21 and completion of one year of service.
• Employee contributions	None
• Credited service	Each year in which a participant completes 1,000 hours. Effective January 1, 2005, each month in which earnings are accrued.
• Pensionable earnings	Salary or wages including shift premium, overtime, incentive, commissions, bonuses, holidays, vacations and non-occupational and temporary occupational disability benefits paid to an employee up to the first day of the calendar month following date of retirement or termination.
• Final average earnings	Average annual earnings for the highest three consecutive years excluding those years in which the participant did not complete a year of service. Effective January 1, 2005, average monthly earnings for each year of service from the later of January 1, 2002 or date of hire.
• Covered Compensation	35-year average of Social Security wage bases ending with the year the participant attains Social Security Retirement Age.
• Social security integration point	One-half of the Social Security tax base in effect for 12 months immediately prior to the effective date of retirement or termination month.
NORMAL RETIREMENT	
• Eligibility	Attain age 65 with five years of participation.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

<ul style="list-style-type: none"> Benefit 	<p>Prior to January 1, 2005: (1) + (2) – (3):</p> <p>1.2% of Final Average Earnings multiplied by Credited Service up to a maximum of 35 years.</p> <p>1. 0.6% of Final Average Earnings exceeding Covered Compensation multiplied by Credited Service up to a maximum of 35 years.</p> <p>2. W.R. Grace Benefit</p> <p>Effective January 1, 2005: (1) – (2):</p> <p>1. 1.20% of Final Average Earnings up to the Social Security Integration Point plus 1.60% of Final Average Earnings in excess of such integration point multiplied by years and months of Credited Service.</p> <p>2. W.R. Grace Benefit</p>
EARLY RETIREMENT (PRIOR TO JANUARY 1, 2005)	
<ul style="list-style-type: none"> Eligibility 	Attainment of age 55 and completion of ten years of service.
<ul style="list-style-type: none"> Benefit 	As described normal retirement benefit, but reduced 1/180 for each of the first 60 months and 1/300 for each of the next 60 months commencement precedes Normal Retirement Date.
RULE-OF-85 EARLY RETIREMENT	
<ul style="list-style-type: none"> Eligibility 	Attainment of age 55 and age plus service equals at least 85 years; also, certain individuals who terminate by October 2000 are deemed to have satisfied Rule of 85.
<ul style="list-style-type: none"> Benefit 	As described in normal retirement benefit, but (1) is reduced 1/240 for each month commencement precedes age 60, and in (2) is reduced 1/180 for each of the first 60 months and 1/300 for each of the next 60 months commencement precedes Normal Retirement Date.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

EARLY RETIREMENT (EFFECTIVE JANUARY 1, 2005)	
<ul style="list-style-type: none"> Eligibility 	<p><u>Unreduced</u>: Attainment of age 60 and completion of ten years of Service.</p> <p><u>Reduced</u>: Attainment of age 55 and completion of ten years of Service.</p>
<ul style="list-style-type: none"> Benefit 	<p><u>Unreduced</u>: As described in normal retirement benefit with no adjustment.</p> <p><u>Reduced</u>: As described normal retirement benefit, but reduced for each month by which the date of retirement precedes age 60. The reduction is equal to 150% divided by an individual's Service for each year prior to age 60. The maximum annual reduction is 5%.</p>
RULE-OF-85 MINIMUM	
<ul style="list-style-type: none"> Eligibility 	Attainment of age 55 and age plus service equals at least 85 years; also, certain individuals who terminate by October 2000 are deemed to have satisfied Rule of 85.
<ul style="list-style-type: none"> Benefit 	As described normal retirement benefit using earnings and service as of December 31, 2004, but (1) is reduced 1/240 for each month commencement precedes age 60, and in (2) is reduced 1/180 for each of the first 60 months and 1/300 for each of the next 60 months commencement precedes Normal Retirement Date.
DEFERRED VESTED	
<ul style="list-style-type: none"> Eligibility 	Five years of vesting service.
<ul style="list-style-type: none"> Benefit 	As described in normal retirement benefit.
DISABILITY	
<ul style="list-style-type: none"> Eligibility 	Not applicable
<ul style="list-style-type: none"> Benefit 	None (continued service credit while receiving benefits under Company long-term disability plan).
PRE-RETIREMENT DEATH	
<ul style="list-style-type: none"> Eligibility 	Spousal beneficiaries of active participants who are vested; also, spousal beneficiaries of vested terminated participants.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS

• Benefit	Benefit that would have been payable to beneficiary under the 50% contingent annuity option if the participant elected retirement on his date of death (or if the participant had terminated employment on his date of death and commenced benefits on the earliest possible date).
POST-RETIREMENT DEATH	None except as elected by optional forms of benefits.
POSTPONED RETIREMENT	
• Eligibility	Employee option
• Benefit	As described normal retirement benefit based on earnings and service at actual retirement date.
FORM OF BENEFITS	
• Automatic form for unmarried participants	Life annuity
• Automatic form for married participants	50% joint and survivor annuity, actuarially reduced.
• Optional forms	50%, 75% and 100% joint and survivor annuities and a 5-year certain and continuous annuity. A 51% lump sum combined with a 49% annuity is available on the benefits earned through the end of 2004.
• Optional form conversion factors	5% and 417(e) applicable mortality
MISCELLANEOUS	
• Maximum compensation	The plan was frozen as of September 30, 2016.
• Maximum benefits	The plan was frozen as of September 30, 2016.

SCHEDULE SB, PART V – SUMMARY OF PLAN PROVISIONS**Benefits Included or Excluded**

Unless noted below, all benefits provided by the plan, as restated and amended through September 30, 2016, are included in this valuation.

- **Most recent plan amendments included (Ashland Hercules Plan):** The Ashland Hercules Plan document as amended through September 30, 2016
- **Plan amendments excluded:** None
- **Internal Revenue Code limitations:** The limitations of Internal Revenue Code Section 415(b) and 401(a)(17) have been incorporated into our calculations.
- **IRC Section 416 rules for top-heavy plans:** We did not test whether the Merged plan is top-heavy (when the present value of benefits for key employees equals or exceeds 60 percent of the present value for all participants). However, we expect that the plan is not top-heavy due to the large number of rank-and-file participants; therefore, the funding target and target normal cost do not reflect any liability for top-heavy benefit accruals.
- **IRC Section 436 benefit restrictions:**
 - *Unpredictable contingent event benefits:* This valuation excludes restricted contingent event benefits that occurred before the valuation date but includes contingent event benefits which are expected to occur on or after the valuation date regardless of anticipated funding-based limitations.
 - *Plan amendments:* See above.
 - *Prohibited payments:* Limitations on prohibited benefits (if any) are reflected for annuity starting dates before the valuation date but are ignored for annuity starting dates on or after the valuation date
 - *Benefit accruals:* The plan is frozen and therefore does not have benefit accruals.
- **Unpredictable contingent event benefits:** The plan does not have any unpredictable contingent event benefits.

PLAN PROVISION CHANGES SINCE PRIOR VALUATION

None.

Plan Name	Ashland Hercules Pension Plan
Plan Sponsor EIN	61-1782197
ERISA Plan #	001
Plan Year Ending	9/30/2018

The required attachment marked with an "X" in the Attachment column is included within the "Signed Schedule MB or Schedule SB" attachment to Schedule SB location which consists of the entire Schedule SB and its attachments.

Form / Schedule	Line#	Description	Attachment Title (if different from Description)	Attach- ment
5500 Sch. SB	None	Statement by Enrolled Actuary		
5500 Sch. SB	Line 27	Actuarial Information Based on Pre-PPA Funding Rules		
5500 Sch. SB	Line E	Information for Each Individual Employer		
5500 Sch. SB	Line 4	Additional Information for Plans in At-Risk Status		
5500 Sch. SB	Line 7	Explanation of Discrepancy in Prior Year Funding Standard Carryover Balance or Prefunding		
5500 Sch. SB	Line 8	Late Election to Apply Balances to Quarterly Installments		
5500 Sch. SB	Line 9	Explanation of Credit Balance Discrepancy		
5500 Sch. SB	Line 18	Contributions Made to the Plan for the Plan Year		
5500 Sch. SB	Line 19	Discounted Employer Contributions		
5500 Sch. SB	Line 20c	Liquidity Requirement Certification		
5500 Sch. SB	Line 22	Description of Weighted Average Retirement Age		X
5500 Sch. SB	Line 23	Information on Use of Multiple Mortality Tables		
5500 Sch. SB	Line 23	Information on Use of Substitute Mortality Tables		
5500 Sch. SB	Part V	Statement of Actuarial Assumptions/Methods		X
5500 Sch. SB	Part V	Summary of Plan Provisions		X
5500 Sch. SB	Line 24	Change in Actuarial Assumptions		X
5500 Sch. SB	Line 25	Change in Method		
5500 Sch. SB	Line 26	Schedule of Active Participant Data		X
5500 Sch. SB	Line 27	Balances Subject to Binding Agreement with PBGC		
5500 Sch. SB	Line 27	Alternative 17-Year Funding Schedule of Airlines		
5500 Sch. SB	Line 32	Schedule of Amortization Bases		X
5500 Sch. SB	Line 15	Other Attachment [Enter Description]	Line 15 Val AFTAP Differences	X

Plan Name	Ashland Hercules Pension Plan
Plan Sponsor EIN	61-1782197
ERISA Plan #	001
Plan Year Ending	9/30/2018

The required attachment marked with an "X" in the Attachment column is included within the "Signed Schedule MB or Schedule SB" attachment to Schedule SB location which consists of the entire Schedule SB and its attachments.

Form / Schedule	Line#	Description	Attachment Title (if different from Description)	Attach- ment
5500 Sch. SB	None	Statement by Enrolled Actuary		
5500 Sch. SB	Line 27	Actuarial Information Based on Pre-PPA Funding Rules		
5500 Sch. SB	Line E	Information for Each Individual Employer		
5500 Sch. SB	Line 4	Additional Information for Plans in At-Risk Status		
5500 Sch. SB	Line 7	Explanation of Discrepancy in Prior Year Funding Standard Carryover Balance or Prefunding		
5500 Sch. SB	Line 8	Late Election to Apply Balances to Quarterly Installments		
5500 Sch. SB	Line 9	Explanation of Credit Balance Discrepancy		
5500 Sch. SB	Line 18	Contributions Made to the Plan for the Plan Year		
5500 Sch. SB	Line 19	Discounted Employer Contributions		
5500 Sch. SB	Line 20c	Liquidity Requirement Certification		
5500 Sch. SB	Line 22	Description of Weighted Average Retirement Age		X
5500 Sch. SB	Line 23	Information on Use of Multiple Mortality Tables		
5500 Sch. SB	Line 23	Information on Use of Substitute Mortality Tables		
5500 Sch. SB	Part V	Statement of Actuarial Assumptions/Methods		X
5500 Sch. SB	Part V	Summary of Plan Provisions		X
5500 Sch. SB	Line 24	Change in Actuarial Assumptions		X
5500 Sch. SB	Line 25	Change in Method		
5500 Sch. SB	Line 26	Schedule of Active Participant Data		X
5500 Sch. SB	Line 27	Balances Subject to Binding Agreement with PBGC		
5500 Sch. SB	Line 27	Alternative 17-Year Funding Schedule of Airlines		
5500 Sch. SB	Line 32	Schedule of Amortization Bases		X
5500 Sch. SB	Line 15	Other Attachment [Enter Description]	Line 15 Val AFTAP Differences	X

Plan Name	Ashland Hercules Pension Plan
Plan Sponsor EIN	61-1782197
ERISA Plan #	001
Plan Year Ending	9/30/2018

The required attachment marked with an "X" in the Attachment column is included within the "Signed Schedule MB or Schedule SB" attachment to Schedule SB location which consists of the entire Schedule SB and its attachments.

Form / Schedule	Line#	Description	Attachment Title (if different from Description)	Attach- ment
5500 Sch. SB	None	Statement by Enrolled Actuary		
5500 Sch. SB	Line 27	Actuarial Information Based on Pre-PPA Funding Rules		
5500 Sch. SB	Line E	Information for Each Individual Employer		
5500 Sch. SB	Line 4	Additional Information for Plans in At-Risk Status		
5500 Sch. SB	Line 7	Explanation of Discrepancy in Prior Year Funding Standard Carryover Balance or Prefunding		
5500 Sch. SB	Line 8	Late Election to Apply Balances to Quarterly Installments		
5500 Sch. SB	Line 9	Explanation of Credit Balance Discrepancy		
5500 Sch. SB	Line 18	Contributions Made to the Plan for the Plan Year		
5500 Sch. SB	Line 19	Discounted Employer Contributions		
5500 Sch. SB	Line 20c	Liquidity Requirement Certification		
5500 Sch. SB	Line 22	Description of Weighted Average Retirement Age		X
5500 Sch. SB	Line 23	Information on Use of Multiple Mortality Tables		
5500 Sch. SB	Line 23	Information on Use of Substitute Mortality Tables		
5500 Sch. SB	Part V	Statement of Actuarial Assumptions/Methods		X
5500 Sch. SB	Part V	Summary of Plan Provisions		X
5500 Sch. SB	Line 24	Change in Actuarial Assumptions		X
5500 Sch. SB	Line 25	Change in Method		
5500 Sch. SB	Line 26	Schedule of Active Participant Data		X
5500 Sch. SB	Line 27	Balances Subject to Binding Agreement with PBGC		
5500 Sch. SB	Line 27	Alternative 17-Year Funding Schedule of Airlines		
5500 Sch. SB	Line 32	Schedule of Amortization Bases		X
5500 Sch. SB	Line 15	Other Attachment [Enter Description]	Line 15 Val AFTAP Differences	X