Form 5500-SF

Department of the Treasury
Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

Pension Benefit Guaranty Corporation

Short Form Annual Return/Report of Small Employee Benefit Plan

This form is required to be filed 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).

▶ **Complete all entries in accordance with the instructions to the Form 5500-SF.**

OMB Nos. 1210-0110
1210-0089

2017

This Form is Open to Public Inspection

Part I Annual Report Identification Information

For calendar plan year 2017 or fiscal plan year beginning 01/01/2017 and ending 12/31/2017

A This return/report is for:
- [X] a single-employer plan
- [ ] a multiple-employer plan (not multiemployer) (Filers checking this box must attach a list of participating employer information in accordance with the form instructions.)
- [ ] a one-participant plan
- [ ] a foreign plan

B This return/report is
- [ ] the first return/report
- [ ] the final return/report
- [ ] an amended return/report
- [ ] a short plan year return/report (less than 12 months)

C Check box if filing under:
- [X] Form 5558
- [ ] automatic extension
- [ ] DFVC program
- [ ] special extension (enter description)

Part II Basic Plan Information—enter all requested information

1a Name of plan
AMERICAN RESEARCH CORPORATION DEFINED BENEFIT PLAN

1b Three-digit plan number (PN) ▶ 002

1c Effective date of plan 01/01/2014

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)
AMERICAN RESEARCH CORPORATION

607 CAMDEN STREET
SAN ANTONIO, TX 78215

2b Employer Identification Number (EIN) 46-1650548

2c Sponsor's telephone number 210-253-3426

2d Business code (see instructions) 621111

3a Plan administrator's name and address [X] Same as Plan Sponsor.

3b Administrator's EIN

3c Administrator's telephone number

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

5a Total number of participants at the beginning of the plan year	**5a**	94
b Total number of participants at the end of the plan year	**5b**	107
c Number of participants with account balances as of the end of the plan year (only defined contribution plans complete this item)	**5c**	
d(1) Total number of active participants at the beginning of the plan year	**5d(1)**	75
d(2) Total number of active participants at the end of the plan year	**5d(2)**	64
e Number of participants who terminated employment during the plan year with accrued benefits that were less than 100% vested	**5e**	0

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, if applicable, a Schedule SB or Schedule MB completed and signed by an enrolled actuary, 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.	08/20/2018	ERIC LAWITZ
	Signature of plan administrator	Date	Enter name of individual signing as plan administrator
SIGN HERE	Filed with authorized/valid electronic signature.	08/20/2018	ERIC LAWITZ
	Signature of employer/plan sponsor	Date	Enter name of individual signing as employer or plan sponsor

6a Were all of the plan's assets during the plan year invested in eligible assets? (See instructions.) ..... [X] Yes [ ] No

b Are you claiming a waiver of the annual examination and report of an independent qualified public accountant (IQPA) under 29 CFR 2520.104-46? (See instructions on waiver eligibility and conditions)..... [X] Yes [ ] No

If you answered "No" to either line 6a or line 6b, the plan cannot use Form 5500-SF and must instead use Form 5500.

c If the plan is a defined benefit plan, is it covered under the PBGC insurance program (see ERISA section 4021)? ..... [ ] Yes [X] No [ ] Not determined

If "Yes" is checked, enter the My PAA confirmation number from the PBGC premium filing for this plan year_____. (See instructions.)

Part III Financial Information

7 Plan Assets and Liabilities		(a) Beginning of Year	(b) End of Year
a Total plan assets	7a	1083706	1237834
b Total plan liabilities	7b		
c Net plan assets (subtract line 7b from line 7a)	7c	1083706	1237834
8 Income, Expenses, and Transfers for this Plan Year		**(a) Amount**	**(b) Total**
a Contributions received or receivable from: (1) Employers	8a(1)	0	
(2) Participants	8a(2)	0	
(3) Others (including rollovers)	8a(3)		
b Other income (loss)	8b	154128	
c Total income (add lines 8a(1), 8a(2), 8a(3), and 8b)	8c		154128
d Benefits paid (including direct rollovers and insurance premiums to provide benefits)	8d		
e Certain deemed and/or corrective distributions (see instructions)	8e		
f Administrative service providers (salaries, fees, commissions)	8f	0	
g Other expenses	8g	0	
h Total expenses (add lines 8d, 8e, 8f, and 8g)	8h		0
i Net income (loss) (subtract line 8h from line 8c)	8i		154128
j Transfers to (from) the plan (see instructions)	8j		

Part IV Plan Characteristics

9a If the plan provides pension benefits, enter the applicable pension feature codes from the List of Plan Characteristic Codes in the instructions:
1A 1D 1I 3D

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

Part V Compliance Questions

10 During the plan year:		Yes	No	Amount
a Was there a failure to transmit to the plan any participant contributions within the time period described in 29 CFR 2510.3-102? (See instructions and DOL's Voluntary Fiduciary Correction Program)	10a		X	
b Were there any nonexempt transactions with any party-in-interest? (Do not include transactions reported on line 10a.)	10b		X	
c Was the plan covered by a fidelity bond?	10c	X		120000
d Did the plan have a loss, whether or not reimbursed by the plan's fidelity bond, that was caused by fraud or dishonesty?	10d		X	
e Were any fees or commissions paid to any brokers, agents, or other persons by an insurance carrier, insurance service, or other organization that provides some or all of the benefits under the plan? (See instructions.)	10e		X	
f Has the plan failed to provide any benefit when due under the plan?	10f		X	
g Did the plan have any participant loans? (If "Yes," enter amount as of year-end.)	10g		X	
h If this is an individual account plan, was there a blackout period? (See instructions and 29 CFR 2520.101-3.)	10h			
i If 10h was answered "Yes," check the box if you either provided the required notice or one of the exceptions to providing the notice applied under 29 CFR 2520.101-3	10i			

Part VI Pension Funding Compliance

11	Is this a defined benefit plan subject to minimum funding requirements? (If "Yes," see instructions and complete Schedule SB (Form 5500) and line 11a below)	[X] Yes [ ] No
11a	Enter the unpaid minimum required contributions for all years from Schedule SB (Form 5500) line 40	**11a** 0
12	Is this a defined contribution plan subject to the minimum funding requirements of section 412 of the Code or section 302 of ERISA? (If "Yes," complete line 12a or lines 12b, 12c, 12d, and 12e below, as applicable.)	[ ] Yes [X] No
a	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 letter ruling granting the waiver. Month _____ Day _____ Year _____	

If you completed line 12a, complete lines 3, 9, and 10 of Schedule MB (Form 5500), and skip to line 13.

b	Enter the minimum required contribution for this plan year	**12b**	
c	Enter the amount contributed by the employer to the plan for this plan year	**12c**	
d	Subtract the amount in line 12c from the amount in line 12b. Enter the result (enter a minus sign to the left of a negative amount)	**12d**	
e	Will the minimum funding amount reported on line 12d be met by the funding deadline?		[ ] Yes [ ] No [ ] N/A

Part VII Plan Terminations and Transfers of Assets

13a	Has a resolution to terminate the plan been adopted in any plan year?		[ ] Yes [X] No
	If "Yes," enter the amount of any plan assets that reverted to the employer this year	**13a**	
b	Were all the plan assets distributed to participants or beneficiaries, transferred to another plan, or brought under the control of the PBGC?		[ ] Yes [X] No
c	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.)		

13c(1) Name of plan(s):	**13c(2)** EIN(s)	**13c(3)** PN(s)

SCHEDULE SB (Form 5500)

Department of the Treasury
Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

Pension Benefit Guaranty Corporation

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 01/01/2017 and ending 12/31/2017

▶ **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
AMERICAN RESEARCH CORPORATION DEFINED BENEFIT PLAN

B Three-digit plan number (PN) ▶ 002

C Plan sponsor's name as shown on line 2a of Form 5500 or 5500-SF
AMERICAN RESEARCH CORPORATION

D Employer Identification Number (EIN)
46-1650548

E Type of plan: [X] Single [ ] Multiple-A [ ] Multiple-B

F Prior year plan size: [X] 100 or fewer [ ] 101-500 [ ] More than 500

Part I Basic Information

1 Enter the valuation date: Month 01 Day 01 Year 2017

2 Assets:

a Market value	**2a**	1080374
b Actuarial value	**2b**	1080374

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	0	0	0
b For terminated vested participants	0	0	0
c For active participants	93	668908	853905
d Total	93	668908	853905

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**	5.72 %
6 Target normal cost	**6**	19418

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

Signature of actuary	Date: 08/15/2018
THEODORE ANDERSEN, MAAA, MSPA	17-02034
Type or print name of actuary	Most recent enrollment number
PENSION ASSOCIATES	203-356-0306
Firm name	Telephone number (including area code)
2001 W MAIN ST, STE 230 STAMFORD, CT 06902	
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 [ ]

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	0
8	Portion elected for use to offset prior year's funding requirement (line 35 from prior year)	0	0
9	Amount remaining (line 7 minus line 8)	0	0
10	Interest on line 9 using prior year's actual return of 2.32 %	0	0
11	Prior year's excess contributions to be added to prefunding balance:		
	a Present value of excess contributions (line 38a from prior year)		271786
	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 5.91%		16063
	b(2) Interest on line 38b from prior year Schedule SB, using prior year's actual return		0
	c Total available at beginning of current plan year to add to prefunding balance		287849
	d Portion of (c) to be added to prefunding balance		0
12	Other reductions in balances due to elections or deemed elections	0	0
13	Balance at beginning of current year (line 9 + line 10 + line 11d – line 12)	0	0

Part III Funding Percentages

14	Funding target attainment percentage	14	126.52%
15	Adjusted funding target attainment percentage	15	126.52%
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	148.37%
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

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**	0
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**	19418
b Excess assets, if applicable, but not greater than line 31a	**31b**	19418

32 Amortization installments:	Outstanding Balance	Installment
a Net shortfall amortization installment	0	0
b Waiver amortization installment	0	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**	0

	Carryover balance	Prefunding balance	Total balance
35 Balances elected for use to offset funding requirement	0	0	0

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**	0
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**	

Form 5500-SF

Department of the Treasury
Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

Pension Benefit Guaranty Corporation

Short Form Annual Return/Report of Small Employee Benefit Plan

This form is required to be filed under sections 104 and 4065 of the Employee Retirement Income Security Act of 1974 (ERISA), and section 6057(b) and 6058(a) of the Internal Revenue Code (the Code).

► Complete all entries in accordance with the instructions to the Form 5500-SF.

OMB Nos. 1210-0110
1210-0089

2017

This Form is Open to Public Inspection

Part I Annual Report Identification Information

For calendar plan year 2017 or fiscal plan year beginning 01/01/2017 and ending 12/31/2017

A This return/report is for:
- [x] a single-employer plan
- [ ] a multiple-employer plan (not multiemployer) (Filers checking this box must attach a list of participating employer information in accordance with the form instructions.)
- [ ] a one-participant plan
- [ ] a foreign plan

B This return/report is:
- [ ] the first return/report
- [ ] the final return/report
- [ ] an amended return/report
- [ ] a short plan year return/report (less than 12 months)

C Check box if filing under:
- [x] Form 5558
- [ ] automatic extension
- [ ] DFVC program
- [ ] special extension (enter description)

Part II Basic Plan Information --- enter all requested information

1a Name of plan
American Research Corporation Defined Benefit Plan

1b Three-digit plan number (PN) ► 002

1c Effective date of plan 01/01/2014

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)
American Research Corporation

607 Camden Street

US San Antonio TX 78215

2b Employer Identification Number (EIN) 46-1650548

2c Sponsor's telephone number (210) 253-3426

2d Business code (see instructions) 621111

3a Plan administrator's name and address [x] Same as Plan Sponsor

3b Administrator's EIN

3c Administrator's telephone number

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

5a	Total number of participants at the beginning of the plan year	**5a**	94
b	Total number of participants at the end of the plan year	**5b**	107
c	Number of participants with account balances as of the end of the plan year (only defined contribution plans complete this item)	**5c**	
d(1)	Total number of active participants at the beginning of the plan year	**5d(1)**	75
d(2)	Total number of active participants at the end of the plan year	**5d(2)**	64
e	Number of participants who terminated employment during the plan year with accrued benefits that were less than 100% vested	**5e**	0

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, if applicable, a Schedule SB or Schedule MB completed and signed by an enrolled actuary, 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	Signature of plan administrator	8/20/18 Date	Eric Lawitz Enter name of individual signing as plan administrator
SIGN HERE	Signature of employer/plan sponsor	8/20/18 Date	Eric Lawitz Enter name of individual signing as employer or plan sponsor

6a Were all of the plan's assets during the plan year invested in eligible assets? (See instructions.) ..... [X] Yes [ ] No

b Are you claiming a waiver of the annual examination and report of an independent qualified public accountant (IQPA) under 29 CFR 2520.104-46? (See instructions on waiver eligibility and conditions.) ..... [X] Yes [ ] No

If you answered "No" to either line 6a or line 6b, the plan cannot use Form 5500-SF and must instead use Form 5500.

c If the plan is a defined benefit plan, is it covered under the PBGC insurance program (see ERISA section 4021)? ..... [ ] Yes [X] No [ ] Not determined

If "Yes" is checked, enter the My PAA confirmation number from the PBGC premium filing for this year _____ (See instructions.)

Part III Financial Information

7 Plan Assets and Liabilities		(a) Beginning of Year	(b) End of Year
a Total plan assets	7a	1,083,706	1,237,834
b Total plan liabilities	7b		
c Net plan assets (subtract line 7b from line 7a)	7c	1,083,706	1,237,834
8 Income, Expenses, and Transfers for this Plan Year		**(a) Amount**	**(b) Total**
a Contributions received or receivable from: (1) Employers	8a(1)	0	
(2) Participants	8a(2)	0	
(3) Others (including rollovers)	8a(3)		
b Other income (loss)	8b	154,128	
c Total income (add lines 8a(1), 8a(2), 8a(3), and 8b)	8c		154,128
d Benefits paid (including direct rollovers and insurance premiums to provide benefits)	8d		
e Certain deemed and/or corrective distributions (see instructions)	8e		
f Administrative service providers (salaries, fees, commissions)	8f	0	
g Other expenses	8g	0	
h Total expenses (add lines 8d, 8e, 8f, and 8g)	8h		0
i Net income (loss) (subtract line 8h from line 8c)	8i		154,128
j Transfers to (from) the plan (see instructions)	8j		

Part IV Plan Characteristics

9a If the plan provides pension benefits, enter the applicable pension feature codes from the List of Plan Characteristic Codes in the instructions:

1A 1D 1I 3D

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

Part V Compliance Questions

10 During the plan year:		Yes	No	N/A	Amount
a Was there a failure to transmit to the plan any participant contributions within the time period described in 29 CFR 2510.3-102? (See instructions and DOL's Voluntary Fiduciary Correction Program)	10a		X		
b Were there any nonexempt transactions with any party-in-interest? (Do not include transactions reported on line 10a.)	10b		X		
c Was the plan covered by a fidelity bond?	10c	X			120,000
d Did the plan have a loss, whether or not reimbursed by the plan's fidelity bond, that was caused by fraud or dishonesty?	10d		X		
e Were any fees or commissions paid to any brokers, agents, or other persons by an insurance carrier, insurance service, or other organization that provides some or all of the benefits under the plan? (See instructions.)	10e		X		
f Has the plan failed to provide any benefit when due under the plan?	10f		X		
g Did the plan have any participant loans? (If "Yes," enter amount as of year end.)	10g		X		
h If this is an individual account plan, was there a blackout period? (See instructions and 29 CFR 2520.101-3.)	10h				
i If 10h was answered "Yes," check the box if you either provided the required notice or one of the exceptions to providing the notice applied under 29 CFR 2520.101-3	10i				

Part VI Pension Funding Compliance

11	Is this a defined benefit plan subject to minimum funding requirements? (If "Yes," see instructions and complete Schedule SB (Form 5500 and line 11a below)		[X] Yes [ ] No
11a	Enter the unpaid minimum required contributions for all years from Schedule SB (Form 5500) line 40	**11a**	0
12	Is this a defined contribution plan subject to the minimum funding requirements of section 412 of the Code or section 302 of ERISA? (If "Yes," complete line 12a or lines 12b, 12c, 12d, and 12e below, as applicable.)		[ ] Yes [X] No
a	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 letter ruling granting the waiver Month _____ Day _____ Year _____		
If you completed line 12a, complete lines 3, 9, and 10 of Schedule MB (Form 5500), and skip to line 13.			
b	Enter the minimum required contribution for this plan year.	**12b**	
c	Enter the amount contributed by the employer to the plan for the plan year	**12c**	
d	Subtract the amount in line 12c from the amount in line 12b. Enter the result (enter a minus sign to the left of a negative amount)	**12d**	
e	Will the minimum funding amount reported on line 12d be met by the funding deadline?		[ ] Yes [ ] No [ ] N/A

Part VII Plan Terminations and Transfers of Assets

13a	Has a resolution to terminate the plan been adopted in any plan year?		[ ] Yes [X] No
	If "Yes," enter the amount of any plan assets that reverted to the employer this year	**13a**	
b	Were all the plan assets distributed to participants or beneficiaries, transferred to another plan, or brought under the control of the PBGC?		[ ] Yes [X] No

c 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.)

13c(1) Name of plan(s):	**13c(2)** EIN(s)	**13c(3)** PN(s)

3538DB

Schedule SB, line 22 -
Description of Weighted Average Retirement Age

American Research Corporation Defined Benefit Plan

46-1650548 / 002

For the plan year 01/01/2017 through 12/31/2017

The age reported is the weighted average of the assumed retirement ages for all active participants as of the valuation date based on their funding target or target normal cost should the funding target of the plan be zero rounded to the nearest whole age. For an active late retiree, the assumed retirement age may be later than the Plan's normal retirement age. Each participant's rate of retirement is assumed to be 100% of his/her assumed retirement age.

3538DB

Schedule SB, Part V
Summary of Plan Provisions

American Research Corporation Defined Benefit Plan
46-1650548 / 002
For the plan year 01/01/2017 through 12/31/2017

Employer: American Research Corporation

Type of Entity - S Corporation

EIN: 46-1650548 TIN: 47-2498042 Plan #: 002 Plan Type: Defined Benefit

Dates: Effective - 01/01/2014 Year end - 12/31/2017 Valuation - 01/01/2017

Top Heavy Years - 2015, 2016, 2017

Eligibility: All employees excluding non-resident aliens, members of an excluded class and union

Minimum age - 21 Months of service - 12

Hours Required for - Eligibility - 1000 Benefit accrual - 500 Vesting - 1000

Plan Entry - First day of 1st or 7th month of plan year on or next following eligibility satisfaction

Retirement:

Normal - Attainment of age 62 and completion of 10 years of participation

Early - Not provided

Average Compensation: Highest 3 consecutive years of service

Top Heavy Minimum Benefit - Highest 5 consecutive top heavy years of participation

Plan Benefits:

Retirement - Frozen benefit formula

Accrued Benefit - Frozen accrued benefit

Maximum allowable distribution is lump sum equivalent of normal form not to exceed 415 maximum allowable distribution, which is the lesser amount computed using a) 5.5% interest and the Applicable Mortality Table or b) the greater of plan actuarial equivalence interest and mortality or 417(e) Minimum

Early Retirement - None

Death Benefit - Present Value of Accrued Benefit

Disability Benefit - None

Top Heavy Minimum: Frozen Top-Heavy benefit

IRS Limitations:

415 Limits - Percent: 100 Dollar: $215,000

Maximum 401(a)(17) compensation - $270,000

Normal Form: Life Annuity

Optional Forms:

Lump Sum
Life Annuity Guaranteed for 10 Years
Joint with 50%, 75% or 100% Survivor Benefit

Vesting Schedule:

Years	Percent
0-1	0%
2	20%
3	40%
4	60%
5	80%
6	100%

Service is calculated using all years of service

3538DB

Schedule SB, Part V
Summary of Plan Provisions

American Research Corporation Defined Benefit Plan
46-1650548 / 002

For the plan year 01/01/2017 through 12/31/2017

Present Value of Accrued Benefit: Based on the greater of 417(e) or Actuarial Equivalence

417(e):

Interest Rates -

Segment #	Years	Rate %
Segment 1	0 - 5	2.04
Segment 2	6 - 20	4.03
Segment 3	> 20	4.82

Mortality Table - 17E - 2017 Applicable Mortality Table for 417(e) (unisex)

Actuarial Equivalence:

Pre-Retirement - Interest - 5%
Mortality Table - None

Post-Retirement - Interest - 5%
Mortality Table - 17E - 2017 Applicable Mortality Table for 417(e) (unisex)

3538DB

Schedule SB, Part V
Statement of Actuarial Assumptions/Methods

American Research Corporation Defined Benefit Plan
46-1650548 / 002
For the plan year 01/01/2017 through 12/31/2017

Valuation Date: 01/01/2017

Funding Method: As prescribed in IRC Section 430

Age - Eligibility age at last birthday and other ages at last birthday

New participants are included in current year's valuation

Prospective Compensation - Highest 3 consecutive years of service

Form of Payment - Assumed form of payment for funding is lump sum equivalent of normal form. Funding Target for lump sum is the greater of the present value of accrued benefit computed using funding segment rates and 417(e) Applicable Mortality Table or lump sum at the assumed retirement date of accrued benefit using plan actuarial equivalence discounted using appropriate segment rate. Lump sum on plan actuarial equivalence rates will not exceed 415 maximum allowable distribution, which is the lesser amount computed using a) 5.5% interest and the Applicable Mortality Table or b) the greater of plan actuarial equivalence interest and mortality or 417(e) Minimum

Interest Rates -

Segment rates for the Valuation Date as permitted under IRC 430(h)(2)(C)

Segment #	Year	Rate %
Segment 1	0 - 5	1.57
Segment 2	6 - 20	3.77
Segment 3	> 20	4.73

Segment rates as of September 30, 2016 As permitted under IRC 430(h)(2)(C)(iv)(II) - HATFA

Segment #	Year	Rate %
Segment 1	0 - 5	4.16
Segment 2	6 - 20	5.72
Segment 3	> 20	6.48

Pre-Retirement - Mortality Table - None
Early Retirement Table - None
Turnover Table - None
Disability Table - None
Salary Scale - None
Expense Load - None
Ancillary Ben Load - None

Post-Retirement - Mortality Table - 17C - 2017 Combined
Cost of Living - None
Lump Sum - 17E - 2017 Applicable Mortality Table for 417(e) (unisex) at 5%

Asset Valuation Method: Fair market value of assets adjusted for contributions under IRC 430(g)(4)

Discrimination Test Assumptions:

HCE Determination - Based on all employees

Otherwise Excludable - Otherwise Excludable HCEs are included with the Not Otherwise Excludable employees

3538DB

Schedule SB, Part V
Statement of Actuarial Assumptions/Methods

American Research Corporation Defined Benefit Plan
46-1650548 / 002

For the plan year 01/01/2017 through 12/31/2017

410(b)/401(a)(4) Testing:

Pre-Retirement -	Interest -	8.5%
Post-Retirement -	Interest -	8.5%
	Mortality Table -	U84 - 1984 Unisex
Permissively Aggregated Plans -	Tested as a Single Plan	
Compensation -	Use current compensation to calculate the benefit accrual rate (annual method)	
Testing Age -	Normal retirement age or attained age, if older	
Testing Service -	Separate benefiting service for DC and for DB for Accrued-to-Date Method	
Normal Form for MVAR -	Joint with 50% Survivor Benefits	

401(a)(26) Testing:

Compensation -	Use current compensation to calculate the benefit accrual rate for 401(a)(26)
Testing Age -	Normal retirement age or attained age, if older

SCHEDULE SB (Form 5500)	Single-Employer Defined Benefit Plan Actuarial Information	OMB No. 1210-0110
Department of the Treasury Internal Revenue Service Department of Labor Employee Benefits Security Administration Pension Benefit Guaranty Corporation	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.	2017 This Form is Open to Public Inspection

For calendar plan year 2017 or fiscal plan year beginning 01/01/2017 and ending 12/31/2017

▶ **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	B Three-digit plan number (PN) ▶	
American Research Corporation Defined Benefit Plan		002
C Plan sponsor's name as shown on line 2a of Form 5500 or 5500-SF	**D** Employer Identification Number (EIN)	
American Research Corporation	46-1650548	

E Type of plan: [X] Single [ ] Multiple-A [ ] Multiple-B

F Prior year plan size: [X] 100 or fewer [ ] 101-500 [ ] More than 500

Part I Basic Information

1 Enter the valuation date: Month 01 Day 01 Year 2017

2 Assets:

a Market value	2a	1,080,374
b Actuarial value	2b	1,080,374

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	0	0	0
b For terminated vested participants	0	0	0
c For active participants	93	668,908	853,905
d Total	93	668,908	853,905

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	5.72 %
6 Target normal cost	6	19,418

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 presribed 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

Signature of actuary	Date: 08/15/2018
Theodore Andersen, MAAA, MSPA	17-02034
Type or print name of actuary	Most recent enrollment number
Pension Associates	(203) 356-0306
Firm name	Telephone number (including area code)
2001 W Main St, Ste 230 US Stamford CT 06902	
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 [ ]

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	0
8	Portion elected for use to offset prior year's funding requirement (line 35 from prior year)	0	0
9	Amount remaining (line 7 minus line 8)	0	0
10	Interest on line 9 using prior year's actual return of 2.32%	0	0
11	Prior year's excess contributions to be added to prefunding balance:		
a	Present value of excess contributions (line 38a from prior year)		271,786
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 5.91 %		16,063
b(2)	Interest on line 38b from prior year Schedule SB, using prior year's actual return		0
c	Total available at beginning of current plan year to add to prefunding balance		287,849
d	Portion of (c) to be added to prefunding balance		0
12	Other reductions in balances due to elections or deemed elections	0	0
13	Balance at beginning of current year (line 9 + line 10 + line 11d - line 12)	0	0

Part III Funding Percentages

14	Funding target attainment percentage	14	126.52 %
15	Adjusted funding target attainment percentage	15	126.52 %
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	148.37 %
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

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

21 Discount rate:

a Segment rates:

1st segment:	2nd segment:	3rd segment:	
4.16 %	5.72 %	6.48 %	☐ N/A, full yield curve used

b Applicable month (enter code) **21b** 0

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** 19,418

b Excess assets, if applicable, but not greater than line 31a **31b** 19,418

32 Amortization installments:

	Outstanding Balance	Installment
a Net shortfall amortization installment	0	0
b Waiver amortization installment	0	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** 0

	Carryover balance	Prefunding Balance	Total balance
35 Balances elected for use to offset funding requirement	0	0	0

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** 0

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**