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).

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

OMB Nos. 1210-0110
1210-0089

2016

This Form is Open to Public Inspection

Part I Annual Report Identification Information

For calendar plan year 2016 or fiscal plan year beginning 01/01/2016 and ending 12/31/2016

A This return/report is for:
- ☐ a multiemployer plan
- ☐ a multiple-employer plan (Filers checking this box must attach a list of participating employer information in accordance with the form instructions.)
- ☒ a single-employer plan
- ☐ a DFE (specify) ____

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 If the plan is a collectively-bargained plan, check here. . . . . ▶ ☐

D Check box if filing under:
- ☒ Form 5558
- ☐ automatic extension
- ☐ the DFVC program
- ☐ special extension (enter description)

Part II Basic Plan Information—enter all requested information

1a Name of plan
APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

1b Three-digit plan number (PN) ▶ 001

1c Effective date of plan 01/01/1987

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)
APPLIED SYSTEMS, INC.

200 APPLIED PARKWAY
UNIVERSITY PARK, IL 60484

2b Employer Identification Number (EIN) 20-5511045

2c Plan Sponsor's telephone number 708-534-5575

2d Business code (see instructions) 541519

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.	09/27/2017	SUSAN BOUDREAU
	Signature of plan administrator	Date	Enter name of individual signing as plan administrator
SIGN HERE	Filed with authorized/valid electronic signature.	09/27/2017	JACKIE REIDY
	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

Preparer's name (including firm name, if applicable) and address (include room or suite number)

Preparer's telephone number

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 has changed since the last return/report filed for this plan, enter the name, EIN and the plan number from the last return/report:	**4b** EIN	
a Sponsor's name	**4c** PN	

5 Total number of participants at the beginning of the plan year	**5**	1316
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)**	1147
a(2) Total number of active participants at the end of the plan year	**6a(2)**	1187
b Retired or separated participants receiving benefits	**6b**	4
c Other retired or separated participants entitled to future benefits	**6c**	172
d Subtotal. Add lines **6a(2)**, **6b**, and **6c**.	**6d**	1363
e Deceased participants whose beneficiaries are receiving or are entitled to receive benefits.	**6e**	1
f Total. Add lines **6d** and **6e**.	**6f**	1364
g Number of participants with account balances as of the end of the plan year (only defined contribution plans complete this item)	**6g**	1267
h Number of participants that terminated employment during the plan year with accrued benefits that were less than 100% vested	**6h**	27
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:

2E 2J 2F 2G 2K 3D 2S 2T

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)** [X] Insurance
- **(2)** [ ] Code section 412(e)(3) insurance contracts
- **(3)** [X] Trust
- **(4)** [ ] General assets of the sponsor

9b Plan benefit arrangement (check all that apply)

- **(1)** [X] Insurance
- **(2)** [ ] Code section 412(e)(3) insurance contracts
- **(3)** [X] 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)** [X] **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)** [X] **H** (Financial Information)
- **(2)** [ ] **I** (Financial Information – Small Plan)
- **(3)** [X] 1 **A** (Insurance Information)
- **(4)** [X] **C** (Service Provider Information)
- **(5)** [X] **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 2016 Form M-1 annual report. If the plan was not required to file the 2016 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_____

SCHEDULE A (Form 5500)

Department of the Treasury
Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

Pension Benefit Guaranty Corporation

Insurance Information

This schedule is required to be filed under section 104 of the Employee Retirement Income Security Act of 1974 (ERISA).

▶ **File as an attachment to Form 5500.**

▶ Insurance companies are required to provide the information pursuant to ERISA section 103(a)(2).

OMB No. 1210-0110

2016

This Form is Open to Public Inspection

For calendar plan year 2016 or fiscal plan year beginning 01/01/2016 and ending 12/31/2016

A Name of plan
APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

B Three-digit plan number (PN) ▶ 001

C Plan sponsor's name as shown on line 2a of Form 5500
APPLIED SYSTEMS, INC.

D Employer Identification Number (EIN)
20-5511045

Part I **Information Concerning Insurance Contract Coverage, Fees, and Commissions** Provide information for each contract on a separate Schedule A. Individual contracts grouped as a unit in Parts II and III can be reported on a single Schedule A.

1 Coverage Information:

(a) Name of insurance carrier
MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY

(b) EIN	**(c)** NAIC code	**(d)** Contract or identification number	**(e)** Approximate number of persons covered at end of policy or contract year	Policy or contract year	
				(f) From	**(g)** To
04-1590850	65935	SF 51215	1365	01/01/2016	12/31/2016

2 Insurance fee and commission information. Enter the total fees and total commissions paid. List in line 3 the agents, brokers, and other persons in descending order of the amount paid.

(a) Total amount of commissions paid	**(b)** Total amount of fees paid
0	0

3 Persons receiving commissions and fees. (Complete as many entries as needed to report all persons).

(a) Name and address of the agent, broker, or other person to whom commissions or fees were paid

(b) Amount of sales and base commissions paid	Fees and other commissions paid		**(e)** Organization code
	(c) Amount	**(d)** Purpose	

(a) Name and address of the agent, broker, or other person to whom commissions or fees were paid

(b) Amount of sales and base commissions paid	Fees and other commissions paid		**(e)** Organization code
	(c) Amount	**(d)** Purpose	

(a) Name and address of the agent, broker, or other person to whom commissions or fees were paid

(b) Amount of sales and base commissions paid	Fees and other commissions paid		**(e)** Organization code
	(c) Amount	**(d)** Purpose	

(a) Name and address of the agent, broker, or other person to whom commissions or fees were paid

(b) Amount of sales and base commissions paid	Fees and other commissions paid		**(e)** Organization code
	(c) Amount	**(d)** Purpose	

(a) Name and address of the agent, broker, or other person to whom commissions or fees were paid

(b) Amount of sales and base commissions paid	Fees and other commissions paid		**(e)** Organization code
	(c) Amount	**(d)** Purpose	

(a) Name and address of the agent, broker, or other person to whom commissions or fees were paid

(b) Amount of sales and base commissions paid	Fees and other commissions paid		**(e)** Organization code
	(c) Amount	**(d)** Purpose	

(a) Name and address of the agent, broker, or other person to whom commissions or fees were paid

(b) Amount of sales and base commissions paid	Fees and other commissions paid		**(e)** Organization code
	(c) Amount	**(d)** Purpose	

Part II Investment and Annuity Contract Information

Where individual contracts are provided, the entire group of such individual contracts with each carrier may be treated as a unit for purposes of this report.

4	Current value of plan's interest under this contract in the general account at year end	4	
5	Current value of plan's interest under this contract in separate accounts at year end	5	52690278

6 Contracts With Allocated Funds:

a State the basis of premium rates ▶

b	Premiums paid to carrier	6b	
c	Premiums due but unpaid at the end of the year	6c	
d	If the carrier, service, or other organization incurred any specific costs in connection with the acquisition or retention of the contract or policy, enter amount.	6d	

Specify nature of costs ▶

e Type of contract: (1) ☐ individual policies (2) ☐ group deferred annuity

(3) ☐ other (specify) ▶

f If contract purchased, in whole or in part, to distribute benefits from a terminating plan, check here ▶ ☐

7 Contracts With Unallocated Funds (Do not include portions of these contracts maintained in separate accounts)

a Type of contract: (1) ☐ deposit administration (2) ☐ immediate participation guarantee

(3) ☐ guaranteed investment (4) ☒ other ▶ GROUP ANNUITY CONTRACT

b	Balance at the end of the previous year			7b	7338519
c	Additions: (1) Contributions deposited during the year	7c(1)	5589366		
	(2) Dividends and credits	7c(2)	0		
	(3) Interest credited during the year	7c(3)	248147		
	(4) Transferred from separate account	7c(4)	814526		
	(5) Other (specify below)	7c(5)	2090547		
	▶ LN INT, LN PRIN, LOAN DEFAULT, MM T				
	(6)Total additions			7c(6)	8742586
d	Total of balance and additions (add lines **7b** and **7c(6)**)			7d	16081105
e	Deductions:				
	(1) Disbursed from fund to pay benefits or purchase annuities during year	7e(1)	208506		
	(2) Administration charge made by carrier	7e(2)	1234		
	(3) Transferred to separate account	7e(3)	7200816		
	(4) Other (specify below)	7e(4)	45740		
	▶ LN DISTRIB				
	(5) Total deductions			7e(5)	7456296
f	Balance at the end of the current year (subtract line **7e(5)** from line **7d**)			7f	8624809

Part III Welfare Benefit Contract Information

If more than one contract covers the same group of employees of the same employer(s) or members of the same employee organizations(s), the information may be combined for reporting purposes if such contracts are experience-rated as a unit. Where contracts cover individual employees, the entire group of such individual contracts with each carrier may be treated as a unit for purposes of this report.

8 Benefit and contract type (check all applicable boxes)

a ☐ Health (other than dental or vision) **b** ☐ Dental **c** ☐ Vision **d** ☐ Life insurance
e ☐ Temporary disability (accident and sickness) **f** ☐ Long-term disability **g** ☐ Supplemental unemployment **h** ☐ Prescription drug
i ☐ Stop loss (large deductible) **j** ☐ HMO contract **k** ☐ PPO contract **l** ☐ Indemnity contract
m ☐ Other (specify) ▶

9 Experience-rated contracts:				
a Premiums: (1) Amount received	**9a(1)**			
(2) Increase (decrease) in amount due but unpaid	**9a(2)**			
(3) Increase (decrease) in unearned premium reserve	**9a(3)**			
(4) Earned (**(1)** + **(2)** - **(3)**)			**9a(4)**	
b Benefit charges (1) Claims paid	**9b(1)**			
(2) Increase (decrease) in claim reserves	**9b(2)**			
(3) Incurred claims (add **(1)** and **(2)**)			**9b(3)**	
(4) Claims charged			**9b(4)**	
c Remainder of premium: (1) Retention charges (on an accrual basis) --				
(A) Commissions	**9c(1)(A)**			
(B) Administrative service or other fees	**9c(1)(B)**			
(C) Other specific acquisition costs	**9c(1)(C)**			
(D) Other expenses	**9c(1)(D)**			
(E) Taxes	**9c(1)(E)**			
(F) Charges for risks or other contingencies	**9c(1)(F)**			
(G) Other retention charges	**9c(1)(G)**			
(H) Total retention			**9c(1)(H)**	
(2) Dividends or retroactive rate refunds. (These amounts were ☐ paid in cash, or ☐ credited.)			**9c(2)**	
d Status of policyholder reserves at end of year: (1) Amount held to provide benefits after retirement			**9d(1)**	
(2) Claim reserves			**9d(2)**	
(3) Other reserves			**9d(3)**	
e Dividends or retroactive rate refunds due. (Do not include amount entered in line **9c(2)**.)			**9e**	
10 Nonexperience-rated contracts:				
a Total premiums or subscription charges paid to carrier			**10a**	
b If the carrier, service, or other organization incurred any specific costs in connection with the acquisition or retention of the contract or policy, other than reported in Part I, line 2 above, report amount.			**10b**	

Specify nature of costs.

Part IV Provision of Information

11 Did the insurance company fail to provide any information necessary to complete Schedule A? ☐ Yes ☒ No

12 If the answer to line 11 is "Yes," specify the information not provided. ▶

SCHEDULE C (Form 5500)	Service Provider 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). ▶ **File as an attachment to Form 5500.**	**2016** **This Form is Open to Public Inspection.**

For calendar plan year 2016 or fiscal plan year beginning 01/01/2016 and ending 12/31/2016

A Name of plan	**B** Three-digit plan number (PN) ▶	
APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN		001
C Plan sponsor's name as shown on line 2a of Form 5500	**D** Employer Identification Number (EIN)	
APPLIED SYSTEMS, INC.	20-5511045	

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).. . . . . [X] 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

MASSACHUSETTS MUTUAL LIFE INS. CO.

04-1590850

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

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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)

MASSACHUSETTS MUTUAL LIFE INS. CO.

04-1590850

(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?
52 60 63 64 68 72	CONTRACT ADMINISTRATOR	17380	Yes [X] No [ ]	Yes [X] No [ ]	0	Yes [X] No [ ]

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

APPLIED SYSTEMS, INC.

20-5511045

(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?
27	PLAN SPONSOR	0	Yes [X] No [ ]	Yes [ ] No [X]	40000	Yes [ ] No [X]

(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 [ ]

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)

(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 ☐

(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 ☐

(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
APPLIED SYSTEMS, INC.	27	40000

(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.
MASSACHUSETTS MUTUAL LIFE INS. CO. 04-1590850	PLAN RELATED EXPENSES

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	72	0

(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.
PREM U.S. GOVT MONEY MRKT BARINGS 04-3212059	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	72	0

(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.
PREMIER CORE BOND BARINGS 04-3277549	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	72	0

(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.
MM S&P 500 INDEX NORTHERN TRUST 04-3410047	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	72	0

(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.
SELECT MID CAP GR II TRP/FRONTIER 04-3512596	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	72	0

(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.
PREMIER DISCIPLINED GRTH BARINGS 04-3539084	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	72	0

(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.
SELECT FUNDAMENTAL VAL WELLINGTON 04-3584138	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
SMALL CAP VALUE FRANKLIN 13-3151768	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
MID CAP VALUE JP MORGAN 13-3963293	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2010 T. ROWE PRICE 20-0001631	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2020 T. ROWE PRICE 20-0001634	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2030 T. ROWE PRICE 20-0001636	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2040 T. ROWE PRICE 20-0001638	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
BOND INDEX NORTHERN 20-8294681	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
REAL ESTATE OFI 22-3849391	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
SMALL CAP INDEX NORTHERN 39-1882210	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2050 T. ROWE PRICE 51-0612044	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2005 T. ROWE PRICE 52-1151266	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2015 T. ROWE PRICE 52-1151266	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2025 T. ROWE PRICE 52-1151266	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2035 T. ROWE PRICE 52-1151266	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2055 T. ROWE PRICE 52-1151266	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT 2045 T. ROWE PRICE 52-2264646	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
RETIREMENT BALANCED T. ROWE PRICE 56-2294396	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
INTL EQUITY INDEX NORTHERN 56-2496727	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
MID CAP INDEX NORTHERN 56-2496730	BASIS POINTS * PLAN ASSETS

(a) Enter service provider name as it appears on line 2	**(b)** Service Codes (see instructions)	**(c)** Enter amount of indirect compensation
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
JANUS TRITON FUND JATTX 84-0592523	BASIS POINTS * PLAN ASSETS

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
MASSACHUSETTS MUTUAL LIFE INS. CO.	60	0

(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.
EUROPACIFIC GROWTH AMERICAN 95-1411037	BASIS POINTS * PLAN ASSETS

(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.

Part II Service Providers Who Fail or Refuse to Provide Information

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:

SCHEDULE D (Form 5500)

Department of the Treasury
Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

DFE/Participating Plan Information

This schedule is required to be filed under section 104 of the Employee Retirement Income Security Act of 1974 (ERISA).

▶ **File as an attachment to Form 5500.**

OMB No. 1210-0110

2016

This Form is Open to Public Inspection.

For calendar plan year 2016 or fiscal plan year beginning 01/01/2016 and ending 12/31/2016

A Name of plan
APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

B Three-digit plan number (PN) ▶ 001

C Plan or DFE sponsor's name as shown on line 2a of Form 5500
APPLIED SYSTEMS, INC.

D Employer Identification Number (EIN)
20-5511045

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: SIA-BT RETIREMENT BALANCED

b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE

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)
90-0342299-000	P	29108

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-CB REAL ESTATE

b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE

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)
04-1590850-000	P	1577069

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-DO RETIREMENT 2015

b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE

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)
90-0342299-000	P	140728

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-EO RETIREMENT 2025

b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE

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)
90-0342299-000	P	1372243

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-FO RETIREMENT 2035

b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE

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)
90-0342299-000	P	2034958

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-FT RETIREMENT 2010

b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE

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)
90-0342299-000	P	142608

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-GO RETIREMENT 2045

b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE

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)
90-0342299-000	P	638692

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-HO RETIREMENT 2055		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 590172
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-LE PREMIER CORE BOND		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 04-1590850-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 2081687
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-LG PREM U.S. GOVT MONEY MRKT		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 04-1590850-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 11530
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-LK SELECT FUNDAMENTAL VAL		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 04-1590850-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 2558438
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-LT RETIREMENT 2020		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 4463142
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-NU PREMIER DISCIPLINED GRTH		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 04-1590850-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 5550334
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-OT RETIREMENT 2050		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 3613708
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-PT RETIREMENT 2030		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 6933960
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-QA INTL EQUITY INDEX		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 860606
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-QI MID CAP INDEX		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 1140446

a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-QJ MID CAP VALUE		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 1172348
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-QT RETIREMENT 2040		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 6311280
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-QV SMALL CAP INDEX		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 771305
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-QW BOND INDEX		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 841355
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-SF SMALL CAP VALUE		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 90-0342299-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 2015488
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-VB EUROPACIFIC GROWTH		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 04-1590850-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 3050253
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-WF SELECT MID CAP GR		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 04-1590850-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 792037
a Name of MTIA, CCT, PSA, or 103-12 IE: SIA-ZX MM S&P 500 INDEX		
b Name of sponsor of entity listed in (a): MASSACHUSETTS MUTUAL LIFE INSURANCE		
c EIN-PN 04-1590850-000	**d** Entity code P	**e** Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 3996783
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

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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)

Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

Pension Benefit Guaranty Corporation

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

2016

This Form is Open to Public Inspection

For calendar plan year 2016 or fiscal plan year beginning 01/01/2016 and ending 12/31/2016

A Name of plan
APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

B Three-digit plan number (PN) ▶ 001

C Plan sponsor's name as shown on line 2a of Form 5500
APPLIED SYSTEMS, INC.

D Employer Identification Number (EIN)
20-5511045

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	55373	
b Receivables (less allowance for doubtful accounts):			
(1) Employer contributions	1b(1)		
(2) Participant contributions	1b(2)		
(3) Other	1b(3)		
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)	958020	1065190
(9) Value of interest in common/collective trusts	1c(9)	0	0
(10) Value of interest in pooled separate accounts	1c(10)	0	0
(11) Value of interest in master trust investment accounts	1c(11)		
(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)	51167896	60034275
(14) Value of funds held in insurance company general account (unallocated contracts)	1c(14)	7338519	8624809
(15) Other	1c(15)	0	0

			(a) Beginning of Year	(b) End of Year
1d	Employer-related investments:			
	(1) Employer securities	1d(1)	0	0
	(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	59519808	69724274
	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 through1j)	1k	0	0
	Net Assets			
l	Net assets (subtract line 1k from line 1f)	1l	59519808	69724274

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.

	Income		(a) Amount	(b) Total
a	**Contributions:**			
	(1) Received or receivable in cash from: **(A)** Employers	2a(1)(A)	23819	
	(B) Participants	2a(1)(B)	5565547	
	(C) Others (including rollovers)	2a(1)(C)	1669665	
	(2) Noncash contributions	2a(2)		
	(3) Total contributions. Add lines **2a(1)(A), (B), (C),** and line **2a(2)**	2a(3)		7259031
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)	53169	
	(F) Other	2b(1)(F)	248147	
	(G) Total interest. Add lines **2b(1)(A)** through **(F)**	2b(1)(G)		301316
	(2) Dividends: **(A)** Preferred stock	2b(2)(A)		
	(B) Common stock	2b(2)(B)	0	
	(C) Registered investment company shares (e.g. mutual funds)	2b(2)(C)	202615	
	(D) Total dividends. Add lines **2b(2)(A)**, **(B)**, and **(C)**	2b(2)(D)		202615
	(3) Rents	2b(3)		
	(4) Net gain (loss) on sale of assets: **(A)** Aggregate proceeds	2b(4)(A)	581824	
	(B) Aggregate carrying amount (see instructions)	2b(4)(B)	532271	
	(C) Subtract line **2b(4)(B)** from line **2b(4)(A)** and enter result	2b(4)(C)		49553
	(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)		0
(7) Net investment gain (loss) from pooled separate accounts	2b(7)		0
(8) Net investment gain (loss) from master trust investment accounts	2b(8)		
(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)		4306383
c Other income	2c		0
d Total income. Add all **income** amounts in column (b) and enter total	2d		12118898
Expenses			
e Benefit payment and payments to provide benefits:			
(1) Directly to participants or beneficiaries, including direct rollovers	2e(1)	1897051	
(2) To insurance carriers for the provision of benefits	2e(2)	0	
(3) Other	2e(3)	0	
(4) Total benefit payments. Add lines **2e(1)** through **(3)**	2e(4)		1897051
f Corrective distributions (see instructions)	2f		0
g Certain deemed distributions of participant loans (see instructions)	2g		0
h Interest expense	2h		
i Administrative expenses: **(1)** Professional fees	2i(1)	0	
(2) Contract administrator fees	2i(2)	17381	
(3) Investment advisory and management fees	2i(3)	0	
(4) Other	2i(4)	0	
(5) Total administrative expenses. Add lines **2i(1)** through **(4)**	2i(5)		17381
j Total expenses. Add all **expense** amounts in column (b) and enter total	2j		1914432
Net Income and Reconciliation			
k Net income (loss). Subtract line **2j** from line **2d**	2k		10204466
l Transfers of assets:			
(1) To this plan	2l(1)		
(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: LEGACY PROFESSIONAL LLP **(2)** EIN: 32-0043599

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:

		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? Continue to answer "Yes" for any prior year failures until fully corrected. (See instructions and DOL's Voluntary Fiduciary Correction Program.)	4a		X	
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.)	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.)	4c		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.)	4d		X	
e	Was this plan covered by a fidelity bond?	4e	X		1000000
f	Did the plan have a loss, whether or not reimbursed by the plan's fidelity bond, that was caused by fraud or dishonesty?	4f		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?	4g		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?	4h		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.)	4i	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.)	4j		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?	4k		X	
l	Has the plan failed to provide any benefit when due under the plan?	4l		X	
m	If this is an individual account plan, was there a blackout period? (See instructions and 29 CFR 2520.101-3.)	4m		X	
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	4n			
o	Defined Benefit Plan or Money Purchase Pension Plan Only: Were any distributions made during the plan year to an employee who attained age 62 and had not separated from service?	4o			

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

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_____. (See instructions.)

Part V Trust Information

6a Name of trust	**6b** Trust's EIN

6c Name of trustee or custodian	**6d** Trustee's or custodian's telephone number

SCHEDULE R (Form 5500)

Department of the Treasury
Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

Pension Benefit Guaranty Corporation

Retirement Plan Information

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).

▶ **File as an attachment to Form 5500.**

OMB No. 1210-0110

2016

This Form is Open to Public Inspection.

For calendar plan year 2016 or fiscal plan year beginning 01/01/2016 and ending 12/31/2016

A Name of plan
APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

B Three-digit plan number (PN) ▶ 001

C Plan sponsor's name as shown on line 2a of Form 5500
APPLIED SYSTEMS, INC.

D Employer Identification Number (EIN)
20-5511045

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): 04-1590850

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**

Part II Funding Information (If the plan is not subject to the minimum funding requirements of section of 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**

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: _____% Investment-Grade Debt: _____% High-Yield Debt: _____% Real Estate: _____% Other: _____%

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):

Part VII IRS Compliance Questions

20a Is the plan a 401(k) plan? If "No," skip b	☐ Yes ☐ No
20b How did the plan satisfy the nondiscrimination requirements for employee deferrals under section 401(k)(3) for the plan year? Check all that apply:	☐ Design-based safe harbor ☐ "Prior year" ADP test ☐ "Current year" ADP test ☐ N/A
21a What testing method was used to satisfy the coverage requirements under section 410(b) for the plan year? Check all that apply:	☐ Ratio percentage test ☐ Average benefit test ☐ N/A
21b Did the plan satisfy the coverage and nondiscrimination requirements of sections 410(b) and 401(a)(4) for the plan year by combining this plan with any other plan under the permissive aggregation rules?	☐ Yes ☐ No

22a If the plan is a master and prototype plan (M&P) or volume submitter plan that received a favorable IRS opinion letter or advisory letter, enter the date of the letter _____/_____/_____ and the serial number _____.

22b If the plan is an individually-designed plan that received a favorable determination letter from the IRS, enter the date of the most recent determination letter _____/_____/_____.

APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

FINANCIAL STATEMENTS

DECEMBER 31, 2016

APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

FINANCIAL STATEMENTS WITH SUPPLEMENTAL SCHEDULE

DECEMBER 31, 2016 AND 2015

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LEGACY
PROFESSIONALS LLP
CERTIFIED PUBLIC ACCOUNTANTS

REPORT OF INDEPENDENT AUDITORS

To the Participants and Administrative Committee of
Applied Systems, Inc. Retirement Savings Plan

Report on the Financial Statements

We were engaged to audit the accompanying financial statements of Applied Systems, Inc. Retirement Savings Plan (the Plan), which comprise the statements of net assets available for benefits as of December 31, 2016 and 2015, 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.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on conducting the audits 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 Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974, the Plan Administrator instructed us not to perform, and we did not perform, any auditing procedures with respect to the information summarized in Note 4, which was certified by Reliance Trust, 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 certifications from the Trustee as of December 31, 2016 and 2015 and for the years then ended, that the information provided to the Plan Administrator by the Trustee is complete and accurate.

222 Indianapolis Boulevard | Suite 103 | Schererville, IN 46375 | 219-836-1065 | 219-836-2012 Fax | www.legacycpas.com

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.

Emphasis of Matter
As discussed in Note 1, during the year ended December 31, 2016, the Plan adopted new accounting guidance that eliminates the requirement to measure the fair value of fully benefit-responsive investment contracts and provide certain disclosures. In addition, the new accounting guidance eliminates the requirements to disclose individual investments which comprise 5% or more of net assets available for benefits, the net appreciation or depreciation in fair value by type, and the disaggregation of investments that are measured using fair value by nature, characteristics and risks. Our disclaimer of opinion is not modified with respect to this matter.

Report on Supplemental Schedule
The supplemental schedule is required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974 and is presented for the purpose of additional analysis and is not a required part of the financial statements. Because of the significance of the matter described in the *Basis for Disclaimer of Opinion* paragraph, we do not express an opinion on this supplemental schedule.

Report on Form and Content in Compliance With DOL Rules and Regulations
The form and content of the information included in the financial statements and supplemental schedule, 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.

Legacy Professionals LLP

Schererville, Indiana

September 14, 2017

APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

STATEMENTS OF NET ASSETS AVAILABLE FOR BENEFITS

DECEMBER 31, 2016 AND 2015

	2016	2015
ASSETS		
INVESTMENTS - at fair value		
Pooled separate accounts	$ 60,034,275	$ 51,223,269
INVESTMENTS - at contract value		
Guaranteed investment contract	8,624,809	7,338,519
Total investments	68,659,084	58,561,788
EMPLOYER CONTRIBUTIONS RECEIVABLE	1,197,248	-
NOTES RECEIVABLE FROM PARTICIPANTS	1,065,190	958,020
Total assets	70,921,522	59,519,808
LIABILITIES AND NET ASSETS		
LIABILITIES		
Corrective distribution payable	-	221
NET ASSETS AVAILABLE FOR BENEFITS	$ 70,921,522	$ 59,519,587

See accompanying notes to financial statements.

APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

STATEMENTS OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS

YEARS ENDED DECEMBER 31, 2016 AND 2015

	2016	2015
ADDITIONS		
Investment income		
Net appreciation (depreciation) in fair value of investments	$ 4,558,551	$ (56,300)
Interest on guaranteed investment contract	248,147	200,238
Net investment income	4,806,698	143,938
Contributions		
Participants	5,600,896	4,767,568
Employer	1,197,468	1,005,116
Rollover	1,658,135	1,013,312
Total contributions	8,456,499	6,785,996
Interest on notes receivable from participants	53,169	49,878
Total additions	13,316,366	6,979,812
DEDUCTIONS		
Benefits paid to participants	1,897,051	3,729,668
Corrective distributions	-	221
Administrative expenses	17,380	23,722
Total deductions	1,914,431	3,753,611
NET INCREASE	11,401,935	3,226,201
NET ASSETS AVAILABLE FOR BENEFITS		
Beginning of year	59,519,587	56,293,386
End of year	$ 70,921,522	$ 59,519,587

See accompanying notes to financial statements.

NOTE 1. DESCRIPTION OF THE PLAN

The following description provides only general information on the provisions of Applied Systems, Inc. Retirement Savings Plan (the Plan). Participants should refer to the summary plan description for a more complete description of the Plan's provisions.

General - The Plan is a defined contribution retirement plan which covers substantially all full-time and part-time employees of Applied Systems, Inc. and SEMCAT Corp. (collectively, the Company) under the provisions of Section 401(a) of the Internal Revenue Code (IRC), which includes a qualified cash or deferred arrangement as described in Section 401(k) of the IRC, for the benefit of eligible employees of the Company. The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974 (ERISA), as amended.

Eligibility and Participation - Employees who are not otherwise excluded from the Plan, are eligible to participate in the Plan on the date of hire. Prior to November 1, 2015, employees age 21 and older were eligible to participate on the first day of the month following their hire date. New employees who participate in the Plan and do not make alternative elections are automatically enrolled at a 5% contribution rate, and contributions are invested in a default investment account until changed by the participant.

Contributions - Participants may elect to contribute up to a maximum of 100% of their pre-tax compensation as defined by the Plan, subject to certain IRC limitations. Salary deferrals may be designated as (after-tax) Roth deferrals by participants. The Company makes matching contributions to participants who meet allocation conditions of the Plan, in an amount equal to 25% of the first 12% of elective deferrals that each participant contributes to the Plan. Participants may also roll over amounts representing distributions from other qualified retirement plans.

Effective November 1, 2015, the Plan was amended to allow the Company to make additional discretionary profit sharing contributions to the Plan. Such contributions, if any, will be determined as a uniform percentage of compensation for all eligible participants. There were no discretionary contributions for the years ended December 31, 2016 and 2015.

Participant Accounts - Individual accounts are maintained for each participant to reflect the participant's contributions and Company matching contributions, as well as allocations of investment earnings and administrative expenses paid by the Plan. Allocations are based on participant earnings, account balances or specific participant transactions, as defined. The benefit to which a participant is entitled is the benefit that can be provided from the participant's vested account.

NOTE 1. DESCRIPTION OF THE PLAN (CONTINUED)

Investments - Participants may direct contributions into various investment options offered by the Plan. The Plan currently offers twenty-five pooled separate accounts and one benefit-responsive contract as investment options for participants. Poor investment performance by the investments selected by the participants may cause their vested balances to be lower than the amounts contributed to the Plan on their behalf.

Vesting - Participants are fully vested in their pre-tax contributions. Employer matching contributions for individuals hired after January 1, 2016 are vested when the participant has completed three years of vesting service. In the event that an eligible participant passes away or becomes disabled while still employed, a participant will become 100% vested.

For participants hired before January 1, 2016 who worked at least one hour in calendar year 2016, employer matching contributions were vested in accordance with the following schedule:

Years of Service	Percentage
1	20%
2	40%
3	100%

For participants hired and terminated prior to January 1, 2016, employer matching contributions were vested in accordance with the following schedule:

Years of Service	Percentage
1	20%
2	40%
3	60%
4	80%
5	100%

Benefits - Upon termination of service due to death, disability or retirement after age 59½, a participant may elect to receive either a lump-sum amount equal to the value of the participant's vested interest in the account, or annual periodic installments if the participant's account balance exceeds $5,000 over a period selected by the participant not to exceed the participant's life expectancy.

Participants in service may make hardship withdrawals from their vested contributions upon demonstrating immediate and heavy financial need, as allowed under federal rules.

NOTE 1. DESCRIPTION OF THE PLAN (CONTINUED)

Notes Receivable from Participants - Participants may borrow from their accounts a minimum of $1,000 up to a maximum of the lesser of $50,000 or 50% of their vested account balance. A participant may have only one outstanding note at any time. Notes are repayable through payroll deductions over periods ranging up to 60 months, unless used to purchase a primary residence. The interest rate is determined by the Plan Administrator based on prevailing market conditions and is fixed over the life of the note. The interest rate on outstanding participant notes as of December 31, 2016 and 2015 ranged from 5.25% to 5.75%. The Plan treats participant notes that are in default due to a missed payment, and outstanding note balances when a terminated participant takes a distribution, as deemed distributions.

Forfeitures - Included in net assets available for benefits are forfeited nonvested accounts of $50,780 and $5,532 as of December 31, 2016 and 2015, respectively. For the years ended December 31, 2016 and 2015, forfeitures reduced employer contributions by $23,819 and $35,169 respectively.

NOTE 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Method of Accounting - The financial statements have been prepared on the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America.

New Accounting Pronouncement - The Plan adopted applicable provisions of Accounting Standards Update No. 2015-12, *Plan Accounting*, which eliminates the requirement to measure the fair value of the fully benefit-responsive investment contract (FBRIC) and provide certain disclosures. In addition, plans are no longer required to disclose individual investments that represent 5% or more of net assets available for benefits or disclose net appreciation or depreciation for investments by general type. The provisions require plans to continue to disaggregate investments that are measured using fair value by general type; however, plans are no longer required to also disaggregate investments by nature, characteristics and risks. The adoption of this guidance did not have a material impact on the Plan's financial statements. However, the total investments at fair value were reduced by $472,674 from the amount previously reported as of December 31, 2015, and the adjustment from fair value to contract value for the FBRIC of $472,674 at December 31, 2015 was eliminated.

Investments - The investments of the Plan are reported at fair value, except for the fully benefit-responsive investment contract, which is reported at contract value. Contract value is the relevant measure for that portion of the net assets available for benefits of a defined contribution plan attributable to fully benefit-responsive investment contracts because contract value is the amount participants normally would receive if they were to initiate permitted transactions under the terms of the plan. For all other investments, the fair value of a financial instrument is the amount that would be received to sell that asset (or paid to transfer a liability) in an orderly transaction between market participants at the measurement date (the exit price). Net appreciation or depreciation includes the Plan's gains and losses on investments bought and sold as well as held during the year.

NOTE 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Notes Receivable From Participants - Notes receivable from participants are measured at their unpaid principal balance plus any accrued but unpaid interest. Delinquent notes receivable from participants are recorded as a distribution based upon the terms of the Plan document.

Payment of Benefits - Benefit payments to participants are recorded upon distribution. There were no participants who elected to withdraw from the Plan but were not yet paid at either December 31, 2016 or 2015.

Expenses - Certain expenses of maintaining the Plan are paid directly by the Company and are excluded from these financial statements. Fees related to the administration of notes receivable from participants are charged directly to the participant's account and are included in administrative expenses. Certain investment related expenses are netted against net appreciation (depreciation) of fair value of investments.

Corrective Distributions - Amounts payable to the sponsor for contributions in excess of amounts allowed by the Internal Revenue Service are recorded as a liability with a corresponding expense.

Estimates - The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures in the financial statements. Actual results could differ from those estimates.

Reclassifications - Certain reclassifications have been made to the prior year amounts to conform to the presentation for the current year.

Subsequent Events - Subsequent events have been evaluated through September 14, 2017, which is the date the financial statements were available to be issued.

NOTE 3. FAIR VALUE MEASUREMENTS

The *Fair Value Measurements and Disclosures* Topic of the FASB Accounting Standards Codification established a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The following provides a description of the three levels of the fair value hierarchy.

NOTE 3. FAIR VALUE MEASUREMENTS (CONTINUED)

Basis of Fair Value Measurement

Level 1	Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities
Level 2	Quoted prices in markets that are not considered to be active or financial instruments for which all significant inputs are observable, either directly or indirectly
Level 3	Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable

The Plan's investments in pooled separate accounts are classified within Level 2 of the fair value measurements hierarchy. The fair values of the pooled separate accounts have been estimated using the net asset value per share of the investments by reference to the underlying assets, which consist primarily of marketable equity and fixed income securities. Redemptions are available on a daily basis without notice.

NOTE 4. INFORMATION CERTIFIED BY THE TRUSTEE (UNAUDITED)

The Plan Administrator has obtained certifications from Reliance Trust that the following information regarding the Plan's investments as of and for the years ended December 31, 2016 and 2015 is complete and accurate:

	2016	2015
Investments:		
Guaranteed investment contract - at contract value	$ 8,624,809	$ 7,338,519
Pooled separate accounts - at fair value	$ 60,034,275	$ 51,223,269
Investment income:		
Net appreciation (depreciation) in fair value of investments	$ 4,558,551	$ (56,300)
Interest on guaranteed investment contract	$ 248,147	$ 200,238

NOTE 5. INVESTMENT CONTRACT WITH INSURANCE COMPANY

The Plan has a benefit-responsive group annuity contract with Massachusetts Mutual Life Insurance Company (MassMutual). MassMutual maintains the contributions in a general account. The account is credited with earnings on the underlying investments and charged for participant withdrawals and administrative expenses. The group annuity contract issuer is contractually obligated to repay the principal and a specified interest rate that is guaranteed to the Plan. The crediting rate is based on a formula established by the contract issuer. The average yield and crediting interest rates were 2.97% and 2.65% for the years ended December 31, 2016 and 2015, respectively. The contract is included in the statements of net assets available for benefits at contract value. Contract value represents contributions made under the contract, plus earnings, less participant withdrawals and administrative expenses.

This contract meets the fully benefit-responsive investment contract criteria and there is reported at contract value. Contract value is the relevant measure for fully benefit-responsive investment contracts because this is the amount received by participants if they were to initiate permitted transactions under the terms of the Plan. Contract value, as reported to the Plan by MassMutual, represents contributions made under the contract, plus earnings, less participant withdrawals and administrative expenses. Participants may ordinarily direct the withdrawal or transfer of all or a portion of their investment at contract value.

The Plan's ability to receive amounts due is dependent on the issuer's ability to meet its financial obligations. The issuer's ability to meet its contractual obligations may be affected by future economic and regulatory developments.

Certain events may limit the ability of the Plan to transact at contract value. Such events include but may not be limited to the following: (1) temporary absence; (2) change in position or other occurrence qualifying as a temporary break in service under the Plan; (3) transfer or other change of position resulting in employment by an entity controlling, controlled by, or under other common control with the employer; (4) cessation of an employment relationship resulting from a reorganization, merger, layoff or the sale or discontinuance of all or any part of the Plan sponsor's business; (5) removal from the Plan of one or more groups or classifications of participants; (6) partial or complete Plan termination; or (7) Plan disqualification. Plan administration believes the occurrence of such events that would limit the Plan's ability to transact at contract value is not probable.

NOTE 6. RISKS AND UNCERTAINTIES

The Plan invests in various investment securities. Investment securities are exposed to various risks such as interest rate, market and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect participants' account balances and amounts reported in the statements of net assets available for benefits.

NOTE 7. PLAN TERMINATION

Although it has not expressed any intent to do so, the Company has the right, under the Plan, to discontinue its contributions at any time and to terminate the Plan subject to the provisions of ERISA. In the event of Plan termination, participants would become 100 percent vested in the Company contribution portion of their account.

NOTE 8. TAX STATUS

The Internal Revenue Service has determined and informed the Company by a letter dated March 5, 2001, that the Plan and related trust are designed in accordance with applicable sections of the IRC. The Plan has been amended since receiving the determination letter; however, the Company and the Plan Administrator believe that the Plan is currently designed and operated in compliance with the applicable requirements of the IRC and therefore believe that the Plan is qualified and the related trust is tax-exempt. Therefore, no provision for income taxes has been included in the Plan's financial statements.

The Plan files Form 5500, *Annual Return/Report of Employee Benefit Plan*, which is subject to examination by the Internal Revenue Service until the applicable statute of limitations expires.

NOTE 9. PARTY-IN-INTEREST TRANSACTIONS

Certain Plan investments are held by MassMutual, which provides recordkeeping services to the Plan. Therefore, these transactions qualify as party-in-interest transactions.

NOTE 10. RECONCILIATION OF FINANCIAL STATEMENTS TO FORM 5500

The following is a reconciliation of net assets available for benefits per the financial statements to Form 5500:

	2016	2015
Net assets available for benefits per the financial statements	$ 70,921,522	$ 59,519,587
Less - employer contributions receivable	(1,197,248)	-
Add - corrective distribution payable	-	221
Net assets available for benefits per the Form 5500	$ 69,724,274	$ 59,519,808

The following is a reconciliation of total contributions per the financial statements to Form 5500 for the year ended December 31, 2016:

Contributions per the financial statements	$ 8,456,499
Less - prior year corrective distribution	(221)
Less - employer contribution receivable	(1,197,248)
Contributions per the Form 5500	$ 7,259,030

SUPPLEMENTAL SCHEDULE

APPLIED SYSTEMS, INC. RETIREMENT SAVINGS PLAN

SCHEDULE H, LINE 4i

SCHEDULE OF ASSETS (HELD AT END OF YEAR)

DECEMBER 31, 2016

Description of Fund and Investment	Current Value **
* MassMutual Life Insurance	
SF Guaranteed Income Account	$ 8,624,809 ***
Pooled separate accounts:	
Northern Bond Index Fund	841,355
American Funds EuroPacific Growth Fund	3,050,253
Northern International Equity Index Fund	860,606
Northern Mid Cap Index Fund	1,140,446
JP Morgan Mid Cap Value Fund	1,172,348
Barings Premier Core Bond Fund	2,081,687
Barings Premier Indexed Growth Fund	5,550,334
OFI REIT	1,577,069
T.Rowe Price Retirement 2010 Fund	142,608
T.Rowe Price Retirement 2015 Fund	140,728
T.Rowe Price Retirement 2020 Fund	4,463,142
T.Rowe Price Retirement 2025 Fund	1,372,243
T.Rowe Price Retirement 2030 Fund	6,933,960
T.Rowe Price Retirement 2035 Fund	2,034,958
T.Rowe Price Retirement 2040 Fund	6,311,280
T.Rowe Price Retirement 2045 Fund	638,692
T.Rowe Price Retirement 2050 Fund	3,613,708
T.Rowe Price Retirement 2055 Fund	590,172
T.Rowe Price Retirement Income Fund	29,108
Wellington Select Fundamental Value Fund	2,558,438
Northern Trust Select Indexed Equity Fund	3,996,783
Federated Clover/TRP/Ernest	792,037
Franklin Small Cap Value A Fund	2,015,488
Janus Triton T Fund	7,343,998
Northern Small Cap Index Fund	771,305
	60,022,746
Holding account	11,529
* Notes receivable from participants - maturing at various dates with interest rates ranging from 5.25% to 5.75%	1,065,190
Total	$ 69,724,274

* Represents party-in-interest.
** Cost information not required for investments that are participant-directed.
*** Reported at contract value.

MassMutual
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Schedule C Soft Dollar Compensation
Eligible Indirect Compensation Statement

Mutual fund investments of the plan (whether direct or indirect through a separate investment account) may have soft dollar arrangements pursuant to which the investment advisor or sub-advisor to the mutual fund (and/or its affiliates) may direct trades to certain brokers in exchange for research and other services, other than just trade execution. For plans investing directly or indirectly in the MassMutual Premier or Select Funds, MassMutual provided the required written disclosure regarding soft dollar compensation on the Schedule C Formula Description and/or EIC Statement Description Attachment. For all other mutual funds, MassMutual provided the required written disclosure in the Statement of Additional Information ("SAI").

For additional information on soft dollar compensation, refer to the section of the mutual fund's SAI that discusses brokerage allocation and other practices.

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A Name of Plan	B Three-digit plan Number
Applied Systems, Inc. Retirement Savings Plan	**001**
C Plan sponsor's name as shown on line 2a of Form 5500	**D Employer Identification Number**
Applied Systems, Inc.	**205511045**

Schedule H, line 4i - Schedule of Assets (Held At End of Year)

(a)	(b) Identity of issue, borrower, lessor, or similar part	(c) Description of investment including maturity date, rate of interest,collateral, par, or maturity value	(d) Cost	(e) Current Value
*	MassMutual	Guaranteed Interest Account	8,624,809	8,624,809
*	MassMutual	Holding Account - SIA-LG	0	11,530
*	MassMutual	SIA-BT	25,472	29,108
*	MassMutual	SIA-CB	1,344,301	1,577,069
*	MassMutual	SIA-DO	132,752	140,728
*	MassMutual	SIA-EO	1,339,891	1,372,243
*	MassMutual	SIA-FO	1,821,909	2,034,958
*	MassMutual	SIA-FT	117,883	142,608
*	MassMutual	SIA-GO	601,162	638,692
*	MassMutual	SIA-HO	553,712	590,172
*	MassMutual	SIA-LE	1,913,374	2,081,687
*	MassMutual	SIA-LK	1,665,683	2,558,438
*	MassMutual	SIA-LT	3,549,766	4,463,142
*	MassMutual	SIA-NU	3,382,129	5,550,334
*	MassMutual	SIA-OT	2,887,842	3,613,708
*	MassMutual	SIA-PT	5,388,773	6,933,960
*	MassMutual	SIA-QA	831,660	860,606
*	MassMutual	SIA-QI	875,457	1,140,446
*	MassMutual	SIA-QJ	938,604	1,172,348
*	MassMutual	SIA-QT	4,704,991	6,311,280
*	MassMutual	SIA-QV	607,732	771,305
*	MassMutual	SIA-QW	830,748	841,355
*	MassMutual	SIA-SF	1,572,295	2,015,488
*	MassMutual	SIA-VB	2,661,976	3,050,253
*	MassMutual	SIA-WF	693,295	792,037
*	MassMutual	SIA-ZX	3,623,761	3,996,783
*	Janus	Outside Fund	5,375,746	7,343,998
	Participant Loans	5.250000 - 6.000000	0	1,065,190

A Name of Plan	B Three-digit plan Number
Applied Systems, Inc. Retirement Savings Plan	**001**
C Plan sponsor's name as shown on line 2a of Form 5500	**D Employer Identification Number**
Applied Systems, Inc.	**205511045**

Schedule C Formula Description and/or EIC Statement Description

Service Provider Name	Service Provider EIN	Service Provider Address	Formula / EIC Statement
American Funds	951411037		MassMutual provided the Plan with the required written disclosure for Management Fees received by American Funds with respect to EuroPacific Growth (American) separate account (SIA-VB).
Franklin/Templeton	133151768		MassMutual provided the Plan with the required written disclosure for Management Fees received by Franklin/Templeton with respect to Small Cap Value (Franklin) separate account (SIA-SF).
Janus	840592523		MassMutual provided the Plan with the required written disclosure for Management Fees received by Janus with respect to Janus Triton Fund (JATTX) (OF 30256).
JP Morgan	133963293		MassMutual provided the Plan with the required written disclosure for Management Fees received by JP Morgan with respect to Mid Cap Value (JP Morgan) separate account (SIA-QJ).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for soft dollar compensation received by the subadviser with respect to Premier Disciplined Grth (Barings) separate account (SIA-NU).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for soft dollar compensation received by the subadviser with respect to Select Fundamental Val (Wellington) separate account (SIA-LK).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for soft dollar compensation received by the subadviser with respect to Select Mid Cap Gr II (TRP/Frontier) separate account (SIA-WF).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to EuroPacific Growth (American) separate account (SIA-VB).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Mid Cap Value (JP Morgan) separate account (SIA-QJ).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2005 (T. Rowe Price) separate account (SIA-CO).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2010 (T. Rowe Price) separate account (SIA-FT).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2015 (T. Rowe Price) separate account (SIA-DO).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2020 (T. Rowe Price) separate account (SIA-LT).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2025 (T. Rowe Price) separate account (SIA-EO).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2030 (T. Rowe Price) separate account (SIA-PT).
Massachusetts Mutual Life Insurance Company	041590850		MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2035 (T. Rowe Price) separate account

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		(SIA-FO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2040 (T. Rowe Price) separate account (SIA-QT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2045 (T. Rowe Price) separate account (SIA-GO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2050 (T. Rowe Price) separate account (SIA-OT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement 2055 (T. Rowe Price) separate account (SIA-HO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Retirement Balanced (T. Rowe Price) separate account (SIA-BT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the plan with the required written disclosure for 12b-1 Fees received by MassMutual with respect to Small Cap Value (Franklin) separate account (SIA-SF).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the Plan with the required written disclosure for float revenue received by MassMutual.
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the Plan with the required written disclosure for Management Fees received by MassMutual with respect to MM S&P 500 Index (Northern Trust) separate account (SIA-ZX).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the Plan with the required written disclosure for Management Fees received by MassMutual with respect to Prem U.S. Govt Money Mrkt (Barings) separate account (SIA-LG).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the Plan with the required written disclosure for Management Fees received by MassMutual with respect to Premier Core Bond (Barings) separate account (SIA-LE).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the Plan with the required written disclosure for Management Fees received by MassMutual with respect to Premier Disciplined Grth (Barings) separate account (SIA-NU).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the Plan with the required written disclosure for Management Fees received by MassMutual with respect to Select Fundamental Val (Wellington) separate account (SIA-LK).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual provided the Plan with the required written disclosure for Management Fees received by MassMutual with respect to Select Mid Cap Gr II (TRP/Frontier) separate account (SIA-WF).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Administrative Fees of (10 basis points * plan assets) with respect to MM S&P 500 Index (Northern Trust) separate account (SIA-ZX).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Administrative Fees of (10 basis points * plan assets) with respect to Prem U.S. Govt Money Mrkt (Barings) separate account (SIA-LG).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Administrative Fees of (10 basis points * plan assets) with respect to Select Mid Cap Gr II (TRP/Frontier) separate account (SIA-WF).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Administrative Fees of (15 basis points * plan assets) with respect to Premier Core Bond (Barings) separate account (SIA-LE).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Administrative Fees of (15 basis points * plan assets) with respect to Premier Disciplined Grth (Barings) separate account (SIA-NU).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Administrative Fees of (15 basis points * plan assets) with respect to Select Fundamental Val (Wellington) separate account (SIA-LK).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to EuroPacific Growth (American) separate account (SIA-VB).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2005 (T. Rowe Price) separate account (SIA-CO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2010 (T. Rowe Price) separate account (SIA-FT).
Massachusetts Mutual Life Insurance	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with

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Company		respect to Retirement 2015 (T. Rowe Price) separate account (SIA-DO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2020 (T. Rowe Price) separate account (SIA-LT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2025 (T. Rowe Price) separate account (SIA-EO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2030 (T. Rowe Price) separate account (SIA-PT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2035 (T. Rowe Price) separate account (SIA-FO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2040 (T. Rowe Price) separate account (SIA-QT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2045 (T. Rowe Price) separate account (SIA-GO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2050 (T. Rowe Price) separate account (SIA-OT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement 2055 (T. Rowe Price) separate account (SIA-HO).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (15 basis points * plan assets) with respect to Retirement Balanced (T. Rowe Price) separate account (SIA-BT).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (25 basis points * plan assets) with respect to Janus Triton Fund (JATTX) (OF 30256).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (25 basis points * plan assets) with respect to Mid Cap Value (JP Morgan) separate account (SIA-QJ).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (25 basis points * plan assets) with respect to Small Cap Value (Franklin) separate account (SIA-SF).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (30 basis points * plan assets) with respect to Real Estate (OFI) separate account (SIA-CB).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (6 basis points * plan assets) with respect to Bond Index (Northern) separate account (SIA-QW).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (6 basis points * plan assets) with respect to Intl Equity Index (Northern) separate account (SIA-QA).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (6 basis points * plan assets) with respect to Mid Cap Index (Northern) separate account (SIA-QI).
Massachusetts Mutual Life Insurance Company	041590850	MassMutual received estimated Sub-TA Fees of (6 basis points * plan assets) with respect to Small Cap Index (Northern) separate account (SIA-QV).
Northern Funds	208294681	MassMutual provided the Plan with the required written disclosure for Management Fees received by Northern Funds with respect to Bond Index (Northern) separate account (SIA-QW).
Northern Funds	391882210	MassMutual provided the Plan with the required written disclosure for Management Fees received by Northern Funds with respect to Small Cap Index (Northern) separate account (SIA-QV).
Northern Funds	562496727	MassMutual provided the Plan with the required written disclosure for Management Fees received by Northern Funds with respect to Intl Equity Index (Northern) separate account (SIA-QA).
Northern Funds	562496730	MassMutual provided the Plan with the required written disclosure for Management Fees received by Northern Funds with respect to Mid Cap Index (Northern) separate account (SIA-QI).
Oppenheimer	223849391	MassMutual provided the Plan with the required written disclosure for Management Fees received by Oppenheimer with respect to Real Estate (OFI) separate account (SIA-CB).
T. Rowe Price	200001631	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2010 (T. Rowe Price) separate account (SIA-FT).
T. Rowe Price	200001634	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2020 (T. Rowe Price) separate account (SIA-LT).
T. Rowe Price	200001636	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2030 (T. Rowe Price) separate

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		account (SIA-PT).
T. Rowe Price	200001638	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2040 (T. Rowe Price) separate account (SIA-QT).
T. Rowe Price	510612044	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2050 (T. Rowe Price) separate account (SIA-OT).
T. Rowe Price	521151266	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2005 (T. Rowe Price) separate account (SIA-CO).
T. Rowe Price	521151266	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2015 (T. Rowe Price) separate account (SIA-DO).
T. Rowe Price	521151266	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2025 (T. Rowe Price) separate account (SIA-EO).
T. Rowe Price	521151266	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2035 (T. Rowe Price) separate account (SIA-FO).
T. Rowe Price	521151266	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2055 (T. Rowe Price) separate account (SIA-HO).
T. Rowe Price	522264646	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement 2045 (T. Rowe Price) separate account (SIA-GO).
T. Rowe Price	562294396	MassMutual provided the Plan with the required written disclosure for Management Fees received by T. Rowe Price with respect to Retirement Balanced (T. Rowe Price) separate account (SIA-BT).

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