

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 2022 This Form is Open to Public Inspection
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Part I	Annual Report Identification Information
For calendar plan year 2022 or fiscal plan year beginning 01/01/2022 and ending 12/31/2022	
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)
E	If this is a retroactively adopted plan permitted by SECURE Act section 201, check here. ▶ ☐

Part II	Basic Plan Information—enter all requested information		
1a	Name of plan LOWELL OBSERVATORY 403(B) RETIREMENT ANNUITY PLAN	1b	Three-digit plan number (PN) ▶ 001
		1c	Effective date of plan 07/01/1953
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) LOWELL OBSERVATORY 1400 W MARS HILL RD FLAGSTAFF, AZ 86001-4470	2b	Employer Identification Number (EIN) 86-0098918
		2c	Plan Sponsor's telephone number 928-233-3290
		2d	Business code (see instructions) 541700

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.	03/27/2024	CATIE BLAZEK
	Signature of plan administrator	Date	Enter name of individual signing as plan administrator
SIGN HERE			
	Signature of employer/plan sponsor	Date	Enter name of individual signing as employer or plan sponsor
SIGN HERE			
	Signature of DFE	Date	Enter name of individual signing as DFE

3a Plan administrator's name and address ☒ Same as Plan Sponsor		3b Administrator's EIN
		3c Administrator's telephone number
4 If the name and/or EIN of the plan sponsor or the plan name has changed since the last return/report filed for this plan, enter the plan sponsor's name, EIN, the plan name and the plan number from the last return/report: a Sponsor's name c Plan Name		4b EIN 4d PN
5 Total number of participants at the beginning of the plan year		5 291
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) 128
a(2) Total number of active participants at the end of the plan year		6a(2) 150
b Retired or separated participants receiving benefits		6b 0
c Other retired or separated participants entitled to future benefits.....		6c 63
d Subtotal. Add lines 6a(2) , 6b , and 6c		6d 213
e Deceased participants whose beneficiaries are receiving or are entitled to receive benefits.		6e 0
f Total. Add lines 6d and 6e		6f 213
g Number of participants with account balances as of the end of the plan year (only defined contribution plans complete this item).....		6g 192
h Number of participants who terminated employment during the plan year with accrued benefits that were less than 100% vested.....		6h 0
7 Enter the total number of employers obligated to contribute to the plan (only multiemployer plans complete this item)		7
8a If the plan provides pension benefits, enter the applicable pension feature codes from the List of Plan Characteristics Codes in the instructions: 2F 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) ☒ Insurance (2) ☐ Code section 412(e)(3) insurance contracts (3) ☐ Trust (4) ☐ General assets of the sponsor		9b Plan benefit arrangement (check all that apply) (1) ☒ Insurance (2) ☐ Code section 412(e)(3) insurance contracts (3) ☐ Trust (4) ☐ General assets of the sponsor
10 Check all applicable boxes in 10a and 10b to indicate which schedules are attached, and, where indicated, enter the number attached. (See instructions)		
a Pension Schedules (1) ☒ R (Retirement Plan Information) (2) ☐ MB (Multiemployer Defined Benefit Plan and Certain Money Purchase Plan Actuarial Information) - signed by the plan actuary (3) ☐ SB (Single-Employer Defined Benefit Plan Actuarial Information) - signed by the plan actuary		b General Schedules (1) ☒ H (Financial Information) (2) ☐ I (Financial Information – Small Plan) (3) ☒ 2 A (Insurance Information) (4) ☒ C (Service Provider Information) (5) ☒ D (DFE/Participating Plan Information) (6) ☐ G (Financial Transaction Schedules)

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

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

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

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

11c Enter the Receipt Confirmation Code for the 2022 Form M-1 annual report. If the plan was not required to file the 2022 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 2022 This Form is Open to Public Inspection
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For calendar plan year 2022 or fiscal plan year beginning 01/01/2022 and ending 12/31/2022		
A Name of plan LOWELL OBSERVATORY 403(B) RETIREMENT ANNUITY PLAN	B Three-digit plan number (PN) ►	001
C Plan sponsor's name as shown on line 2a of Form 5500 LOWELL OBSERVATORY	D Employer Identification Number (EIN) 86-0098918	

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.
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1 Coverage Information:

(a) Name of insurance carrier MUTUAL OF AMERICA
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(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
13-1614399	88668	059970	213	01/01/2022	12/31/2022

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	5982

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
PHOENIX REGIONAL OFFICE 2398 EAST CAMELBACK ROAD STE 510 PHOENIX, AZ 85016

(b) Amount of sales and base commissions paid	Fees and other commissions paid		(e) Organization code
	(c) Amount	(d) Purpose	
0	5982	PORTION OF INCENTIVE COMP	3

(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	373676
5	Current value of plan's interest under this contract in separate accounts at year end.....	5	12955608

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..... Specify nature of costs ▶	6d	

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 ▶

b	Balance at the end of the previous year	7b	303226
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c	Additions: (1) Contributions deposited during the year	7c(1)	68803
	(2) Dividends and credits.....	7c(2)	0
	(3) Interest credited during the year.....	7c(3)	852
	(4) Transferred from separate account.....	7c(4)	18721
	(5) Other (specify below)	7c(5)	4466

▶ FIN ADJ; ROLLOVER; LOAN INT PAYMENT

(6) Total additions.....	7c(6)	92842
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d	Total of balance and additions (add lines 7b and 7c(6))	7d	396068
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e Deductions:

(1) Disbursed from fund to pay benefits or purchase annuities during year	7e(1)	22312
(2) Administration charge made by carrier.....	7e(2)	80
(3) Transferred to separate account.....	7e(3)	0
(4) Other (specify below)	7e(4)	0

(5) Total deductions.....	7e(5)	22392
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f	Balance at the end of the current year (subtract line 7e(5) from line 7d)	7f	373676
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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)	0
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)	0
(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)	0
(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. Specify nature of costs.	10b	

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 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 2022 This Form is Open to Public Inspection
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For calendar plan year 2022 or fiscal plan year beginning 01/01/2022 and ending 12/31/2022		
A Name of plan	B Three-digit plan number (PN)	001
LOWELL OBSERVATORY 403(B) RETIREMENT ANNUITY PLAN		
C Plan sponsor's name as shown on line 2a of Form 5500	D Employer Identification Number (EIN)	
LOWELL OBSERVATORY	86-0098918	

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.
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1 Coverage Information:

(a) Name of insurance carrier
TIAA-CREF

(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
13-1624203	69345	365298	128	01/01/2022	12/31/2022

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

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
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(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
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(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	6744955
5	Current value of plan's interest under this contract in separate accounts at year end.....	5	7622540

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..... Specify nature of costs ▶	6d	

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 ▶

b	Balance at the end of the previous year	7b	6871566
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c	Additions: (1) Contributions deposited during the year	7c(1)	0
	(2) Dividends and credits.....	7c(2)	0
	(3) Interest credited during the year.....	7c(3)	283129
	(4) Transferred from separate account.....	7c(4)	148198
	(5) Other (specify below)	7c(5)	0

(6) Total additions.....	7c(6)	431327
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d	Total of balance and additions (add lines 7b and 7c(6))	7d	7302893
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e Deductions:

(1) Disbursed from fund to pay benefits or purchase annuities during year	7e(1)	251308
(2) Administration charge made by carrier.....	7e(2)	0
(3) Transferred to separate account.....	7e(3)	259513
(4) Other (specify below)	7e(4)	47117

▶ FIN ADJ.

(5) Total deductions.....	7e(5)	557938
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f	Balance at the end of the current year (subtract line 7e(5) from line 7d)	7f	6744955
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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)	0
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)	0
(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)	0
(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. Specify nature of costs.	10b	

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) Department of the Treasury Internal Revenue Service Department of Labor Employee Benefits Security Administration Pension Benefit Guaranty Corporation	Service Provider 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
		2022
		This Form is Open to Public Inspection.

For calendar plan year 2022 or fiscal plan year beginning 01/01/2022 and ending 12/31/2022	
A Name of plan LOWELL OBSERVATORY 403(B) RETIREMENT ANNUITY PLAN	B Three-digit plan number (PN) ▶ 001
C Plan sponsor's name as shown on line 2a of Form 5500 LOWELL OBSERVATORY	D Employer Identification Number (EIN) 86-0098918

Part I Service Provider Information (see instructions)

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

1 Information on Persons Receiving Only Eligible Indirect Compensation

- a** Check "Yes" or "No" to indicate whether you are excluding a person from the remainder of this Part because they received only eligible indirect compensation for which the plan received the required disclosures (see instructions for definitions and conditions)..... ☒ Yes ☐ No
- b** If you answered line 1a "Yes," enter the name and EIN or address of each person providing the required disclosures for the service providers who received only eligible indirect compensation. Complete as many entries as needed (see instructions).

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
DWS	210 WEST 10TH STREET KANSAS CITY, MO 64105

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
FIDELITY INVESTMENTS	82 DEVONSHIRE STREET BOSTON, MA 02109

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
GOLDMAN SACHS	200 WEST STREET NEW YORK, NY 10282

(b) Enter name and EIN or address of person who provided you disclosures on eligible indirect compensation	
MUTUAL OF AMERICA	320 PARK AVE NEW YORK, NY 10022

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

NEUBERGER BERMAN

1290 AVENUE OF THE AMERICAS
NEW YORK, NY 10104

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

INVESCO

11 GREENWAY PLAZA
STE. 2500
HOUSTON, TX 77046

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

T. ROWE PRICE

100 EAST PRATT STREET
BALTIMORE, MD 21202

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

VANGUARD

100 VANGUARD BOULEVARD
MALVERN, PA 19355

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

AMERICAN CENTURY INVESTMENTS

P.O. BOX 419200
4500 MAIN STREET
KANSAS CITY, MO 64141

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

MFS

111 HUNTINGTON AVENUE
BOSTON, MA 02199

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

DELAWARE FUNDS BY MACQUARIE

PO BOX 9876
PROVIDENCE, RI 02940

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

VICTORY CAPITAL MANAGEMENT INC.

15935 LA CANTERA PARKWAY
BUILDING TWO
SAN ANTONIO, TX 78256

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

PIMCO

840 NEWPORT CENTER DRIVE
SUITE 100
NEWPORT BEACH, CA 92660

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

AMERICAN FUNDS

333 SOUTH HOPE STREET
LOS ANGELES, CA 90071-1406

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

CALVERT RESEARCH AND MANAGEMENT

1825 CONNECTICUT AVENUE NW
SUITE 400
WASHINGTON, DC 20009

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

TIAA

13-1624203

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

(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)

MUTUAL OF AMERICA INVESTMENT CORP

320 PARK AVENUE
NEW YORK, NY 10022

(b) Service Code(s)	(c) Relationship to employer, employee organization, or person known to be a party-in-interest	(d) Enter direct compensation paid by the plan. If none, enter -0-.	(e) Did service provider receive indirect compensation? (sources other than plan or plan sponsor)	(f) Did indirect compensation include eligible indirect compensation, for which the plan received the required disclosures?	(g) Enter total indirect compensation received by service provider excluding eligible indirect compensation for which you answered "Yes" to element (f). If none, enter -0-.	(h) Did the service provider give you a formula instead of an amount or estimated amount?
12 15 37 65	INSURANCE CARRIER	928	Yes ☒ No ☐	Yes ☒ No ☐	0	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
(d) Enter name and EIN (address) of source of indirect compensation	(e) Describe the indirect compensation, including any formula used to determine the service provider's eligibility for or the amount of the indirect compensation.	
(a) Enter service provider name as it appears on line 2	(b) Service Codes (see instructions)	(c) Enter amount of indirect compensation
(d) Enter name and EIN (address) of source of indirect compensation	(e) Describe the indirect compensation, including any formula used to determine the service provider's eligibility for or the amount of the indirect compensation.	
(a) Enter service provider name as it appears on line 2	(b) Service Codes (see instructions)	(c) Enter amount of indirect compensation
(d) Enter name and EIN (address) of source of indirect compensation	(e) Describe the indirect compensation, including any formula used to determine the service provider's eligibility for or the amount of the indirect compensation.	

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 2022 This Form is Open to Public Inspection.
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For calendar plan year 2022 or fiscal plan year beginning 01/01/2022 and ending 12/31/2022		
A Name of plan LOWELL OBSERVATORY 403(B) RETIREMENT ANNUITY PLAN	B Three-digit plan number (PN) ►	001
C Plan or DFE sponsor's name as shown on line 2a of Form 5500 LOWELL OBSERVATORY	D Employer Identification Number (EIN) 86-0098918	

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:	SEPARATE ACCOUNT NUMBER SA2
--	-----------------------------

b Name of sponsor of entity listed in (a):	MUTUAL OF AMERICA
---	-------------------

c EIN-PN 13-1614399-001	d Entity code P	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 12955608
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a Name of MTIA, CCT, PSA, or 103-12 IE:	TIAA REAL ESTATE
--	------------------

b Name of sponsor of entity listed in (a):	TIAA-CREF
---	-----------

c EIN-PN 13-1624203-004	d Entity code P	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions) 520576
--------------------------------	------------------------	--

a Name of MTIA, CCT, PSA, or 103-12 IE:	
--	--

b Name of sponsor of entity listed in (a):	
---	--

c EIN-PN	d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)
-----------------	----------------------	---

a Name of MTIA, CCT, PSA, or 103-12 IE:	
--	--

b Name of sponsor of entity listed in (a):	
---	--

c EIN-PN	d Entity code	e Dollar value of interest in MTIA, CCT, PSA, or 103-12 IE at end of year (see instructions)
-----------------	----------------------	---

a Name of MTIA, CCT, PSA, or 103-12 IE:	
--	--

b Name of sponsor of entity listed in (a):	
---	--

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

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

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

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

SCHEDULE H (Form 5500) Department of the Treasury 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 2022 This Form is Open to Public Inspection
For calendar plan year 2022 or fiscal plan year beginning <u>01/01/2022</u> and ending <u>12/31/2022</u>		
A Name of plan <u>LOWELL OBSERVATORY 403(B) RETIREMENT ANNUITY PLAN</u>		B Three-digit plan number (PN) <u>001</u>
C Plan sponsor's name as shown on line 2a of Form 5500 <u>LOWELL OBSERVATORY</u>		D Employer Identification Number (EIN) <u>86-0098918</u>

Part I Asset and Liability Statement			
1 Current value of plan assets and liabilities at the beginning and end of the plan year. Combine the value of plan assets held in more than one trust. Report the value of the plan's interest in a commingled fund containing the assets of more than one plan on a line-by-line basis unless the value is reportable on lines 1c(9) through 1c(14). Do not enter the value of that portion of an insurance contract which guarantees, during this plan year, to pay a specific dollar benefit at a future date. Round off amounts to the nearest dollar. MTIAs, CCTs, PSAs, and 103-12 IEs do not complete lines 1b(1), 1b(2), 1c(8), 1g, 1h, and 1i. CCTs, PSAs, and 103-12 IEs also do not complete lines 1d and 1e. See instructions.			
Assets		(a) Beginning of Year	(b) End of Year
a Total noninterest-bearing cash.....	1a		
b Receivables (less allowance for doubtful accounts):			
(1) Employer contributions.....	1b(1)	0	0
(2) Participant contributions.....	1b(2)	0	0
(3) Other.....	1b(3)		
c General investments:			
(1) Interest-bearing cash (include money market accounts & certificates of deposit).....	1c(1)	0	0
(2) U.S. Government securities	1c(2)	0	0
(3) Corporate debt instruments (other than employer securities):			
(A) Preferred	1c(3)(A)	0	0
(B) All other	1c(3)(B)	0	0
(4) Corporate stocks (other than employer securities):			
(A) Preferred	1c(4)(A)	0	0
(B) Common.....	1c(4)(B)	0	0
(5) Partnership/joint venture interests	1c(5)	0	0
(6) Real estate (other than employer real property)	1c(6)	0	0
(7) Loans (other than to participants).....	1c(7)	0	0
(8) Participant loans.....	1c(8)	68098	42975
(9) Value of interest in common/collective trusts.....	1c(9)	0	0
(10) Value of interest in pooled separate accounts	1c(10)	492322	520576
(11) Value of interest in master trust investment accounts.....	1c(11)	0	0
(12) Value of interest in 103-12 investment entities	1c(12)	0	0
(13) Value of interest in registered investment companies (e.g., mutual funds).....	1c(13)	23730536	20057572
(14) Value of funds held in insurance company general account (unallocated contracts).....	1c(14)	7106695	7075656
(15) Other	1c(15)	0	0

1d Employer-related investments:		(a) Beginning of Year	(b) End of Year
(1) Employer securities	1d(1)		
(2) Employer real property	1d(2)		
e Buildings and other property used in plan operation	1e		
f Total assets (add all amounts in lines 1a through 1e)	1f	31397651	27696779

Liabilities

g Benefit claims payable	1g		
h Operating payables	1h		
i Acquisition indebtedness	1i		
j Other liabilities	1j		
k Total liabilities (add all amounts in lines 1g through 1j)	1k	0	0

Net Assets

l Net assets (subtract line 1k from line 1f)	1l	31397651	27696779
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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)	418786	
(B) Participants	2a(1)(B)	783020	
(C) Others (including rollovers)	2a(1)(C)	230680	
(2) Noncash contributions	2a(2)	0	
(3) Total contributions. Add lines 2a(1)(A) , (B) , (C) , and line 2a(2)	2a(3)		1432486
b Earnings on investments:			
(1) Interest:			
(A) Interest-bearing cash (including money market accounts and certificates of deposit)	2b(1)(A)	0	
(B) U.S. Government securities	2b(1)(B)	0	
(C) Corporate debt instruments	2b(1)(C)	0	
(D) Loans (other than to participants)	2b(1)(D)	0	
(E) Participant loans	2b(1)(E)	0	
(F) Other	2b(1)(F)	283981	
(G) Total interest. Add lines 2b(1)(A) through (F)	2b(1)(G)		283981
(2) Dividends: (A) Preferred stock	2b(2)(A)	0	
(B) Common stock	2b(2)(B)	0	
(C) Registered investment company shares (e.g. mutual funds)	2b(2)(C)	0	
(D) Total dividends. Add lines 2b(2)(A) , (B) , and (C)	2b(2)(D)		0
(3) Rents	2b(3)		
(4) Net gain (loss) on sale of assets: (A) Aggregate proceeds	2b(4)(A)	0	
(B) Aggregate carrying amount (see instructions)	2b(4)(B)	0	
(C) Subtract line 2b(4)(B) from line 2b(4)(A) and enter result	2b(4)(C)		0
(5) Unrealized appreciation (depreciation) of assets: (A) Real estate	2b(5)(A)		
(B) Other	2b(5)(B)	0	
(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)		-2899232
(8) Net investment gain (loss) from master trust investment accounts	2b(8)		0
(9) Net investment gain (loss) from 103-12 investment entities.....	2b(9)		0
(10) Net investment gain (loss) from registered investment companies (e.g., mutual funds)	2b(10)		-1858960
c Other income	2c		
d Total income. Add all income amounts in column (b) and enter total	2d		-3041725
Expenses			
e Benefit payment and payments to provide benefits:			
(1) Directly to participants or beneficiaries, including direct rollovers	2e(1)	605818	
(2) To insurance carriers for the provision of benefits	2e(2)	52401	
(3) Other	2e(3)	0	
(4) Total benefit payments. Add lines 2e(1) through (3)	2e(4)		658219
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)		
(2) Contract administrator fees	2i(2)		
(3) Investment advisory and management fees	2i(3)		
(4) Other	2i(4)	928	
(5) Total administrative expenses. Add lines 2i(1) through (4)	2i(5)		928
j Total expenses. Add all expense amounts in column (b) and enter total	2j		659147
Net Income and Reconciliation			
k Net income (loss). Subtract line 2j from line 2d	2k		-3700872
l Transfers of assets:			
(1) To this plan	2l(1)		
(2) From this plan	2l(2)		0

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) ☒ Unmodified (2) ☐ Qualified (3) ☐ Disclaimer (4) ☐ Adverse

b Check the appropriate box(es) to indicate whether the IQPA performed an ERISA section 103(a)(3)(C) audit. Check both boxes (1) and (2) if the audit was performed pursuant to both 29 CFR 2520.103-8 and 29 CFR 2520.103-12(d). Check box (3) if pursuant to neither.

(1) ☒ DOL Regulation 2520.103-8 (2) ☐ DOL Regulation 2520.103-12(d) (3) ☐ neither DOL Regulation 2520.103-8 nor DOL Regulation 2520.103-12(d).

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

(1) Name: BEACHFLEISCHMAN PLLC

(2) EIN: 86-0683059

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

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

Part IV Compliance Questions

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

During the plan year:

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

	Yes	No	Amount
4a	X		91

	Yes	No	Amount
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	
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?	X		130000
f Did the plan have a loss, whether or not reimbursed by the plan's fidelity bond, that was caused by fraud or dishonesty?		X	
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.)	X		
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			

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

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

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

5c Was the plan a defined benefit plan covered under the PBGC insurance program at any time during this plan year? (See ERISA section 4021 and instructions.) ☐ Yes ☐ No ☐ Not determined

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

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 2022 This Form is Open to Public Inspection.
For calendar plan year 2022 or fiscal plan year beginning 01/01/2022 and ending 12/31/2022		
A Name of plan LOWELL OBSERVATORY 403(B) RETIREMENT ANNUITY PLAN		B Three-digit plan number (PN) ► 001
C Plan sponsor's name as shown on line 2a of Form 5500 LOWELL OBSERVATORY		D Employer Identification Number (EIN) 86-0098918
Part I	Distributions	
All references to distributions relate only to payments of benefits during the plan year.		
1 Total value of distributions paid in property other than in cash or the forms of property specified in the instructions.....		1 0
2 Enter the EIN(s) of payor(s) who paid benefits on behalf of the plan to participants or beneficiaries during the year (if more than two, enter EINs of the two payors who paid the greatest dollar amounts of benefits): EIN(s): 13-3590259		
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 0
Part II	Funding Information (If the plan is not subject to the minimum funding requirements of section 412 of the Internal Revenue Code or ERISA section 302, skip this Part.)	
4 Is the plan administrator making an election under Code section 412(d)(2) or ERISA section 302(d)(2)? ☐ Yes ☐ No ☐ N/A If the plan is a defined benefit plan, go to line 8.		
5 If a waiver of the minimum funding standard for a prior year is being amortized in this plan year, see instructions and enter the date of the ruling letter granting the waiver. Date: Month _____ Day _____ Year _____ If you completed line 5, complete lines 3, 9, and 10 of Schedule MB and do not complete the remainder of this schedule.		
6 a Enter the minimum required contribution for this plan year (include any prior year accumulated funding deficiency not waived).....		6a
b Enter the amount contributed by the employer to the plan for this plan year.....		6b
c Subtract the amount in line 6b from the amount in line 6a. Enter the result (enter a minus sign to the left of a negative amount).....		6c
If you completed line 6c, skip lines 8 and 9.		
7 Will the minimum funding amount reported on line 6c be met by the funding deadline? ☐ Yes ☐ No ☐ N/A		
8 If a change in actuarial cost method was made for this plan year pursuant to a revenue procedure or other authority providing automatic approval for the change or a class ruling letter, does the plan sponsor or plan administrator agree with the change? ☐ Yes ☐ No ☐ N/A		
Part III	Amendments	
9 If this is a defined benefit pension plan, were any amendments adopted during this plan year that increased or decreased the value of benefits? If yes, check the appropriate box. If no, check the "No" box..... ☐ Increase ☐ Decrease ☐ Both ☐ No		
Part IV	ESOPs (see instructions). If this is not a plan described under section 409(a) or 4975(e)(7) of the Internal Revenue Code, skip this Part.	
10 Were unallocated employer securities or proceeds from the sale of unallocated securities used to repay any exempt loan?..... ☐ Yes ☐ No		
11 a Does the ESOP hold any preferred stock?..... ☐ Yes ☐ No		
b If the ESOP has an outstanding exempt loan with the employer as lender, is such loan part of a "back-to-back" loan? (See instructions for definition of "back-to-back" loan.)..... ☐ Yes ☐ No		
12 Does the ESOP hold any stock that is not readily tradable on an established securities market?..... ☐ Yes ☐ No		
For Paperwork Reduction Act Notice, see the Instructions for Form 5500.		
Schedule R (Form 5500) 2022 v. 220413		

Part V Additional Information for Multiemployer Defined Benefit Pension Plans

13 Enter the following information for each employer that (1) contributed more than 5% of total contributions to the plan during the plan year or (2) was one of the top-ten highest contributors (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 deferred vested and retired participants (inactive participants), as of the beginning of the plan year, whose contributing employer is no longer making contributions to the plan for:		
	a The current plan year. Check the box to indicate the counting method used to determine the number of inactive participants: ☐ last contributing employer ☐ alternative ☐ reasonable approximation (see instructions for required attachment).....	14a	
	b The plan year immediately preceding the current plan year. ☐ Check the box if the number reported is a change from what was previously reported (see instructions for required attachment)	14b	
	c The second preceding plan year. ☐ Check the box if the number reported is a change from what was previously reported (see instructions for required attachment)	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
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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): _____
20	PBGC missed contribution reporting requirements. If this is a multiemployer plan or a single-employer plan that is not covered by PBGC, skip line 20. a Is the amount of unpaid minimum required contributions for all years from Schedule SB (Form 5500) line 40 greater than zero? ☐ Yes ☐ No b If line 20a is "Yes," has PBGC been notified as required by ERISA sections 4043(c)(5) and/or 303(k)(4)? Check the applicable box: ☐ Yes. ☐ No. Reporting was waived under 29 CFR 4043.25(c)(2) because contributions equal to or exceeding the unpaid minimum required contribution were made by the 30th day after the due date. ☐ No. The 30-day period referenced in 29 CFR 4043.25(c)(2) has not yet ended, and the sponsor intends to make a contribution equal to or exceeding the unpaid minimum required contribution by the 30th day after the due date. ☐ No. Other. Provide explanation _____

403(B) Thrift Plan for Lowell Observatory

Year Ended December 31, 2022

403(B) Thrift Plan for Lowell Observatory

Year Ended December 31, 2022

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Independent Auditors' Report

Plan Administrator
403(B) Thrift Plan for Lowell Observatory
Flagstaff, Arizona

Scope and Nature of the ERISA Section 103(a)(3)(C) Audit

We have performed audits of the financial statements of 403(B) Thrift Plan for Lowell Observatory, an employee benefit plan subject to the Employee Retirement Income Security Act of 1974 (ERISA), as permitted by ERISA Section 103(a)(3)(C) (ERISA Section 103(a)(3)(C) audit). The financial statements comprise the statements of net assets available for benefits as of December 31, 2022 and 2021, and the related statement of changes in net assets available for benefits for the year ended December 31, 2022, and the related notes to the financial statements.

Management, having determined it is permissible in the circumstances, has elected to have the audits of 403(B) Thrift Plan for Lowell Observatory's financial statements performed in accordance with ERISA Section 103(a)(3)(C) pursuant to 29 CFR 2520.103-8 of the Department of Labor's Rules and Regulations for Reporting and Disclosure under ERISA. As permitted by ERISA Section 103(a)(3)(C), our audits need not extend to any statements or information related to assets held for investment of the plan (investment information) by a bank or similar institution or insurance carrier that is regulated, supervised, and subject to periodic examination by a state or federal agency, provided that the statements or information regarding assets so held are prepared and certified to by the bank or similar institution or insurance carrier in accordance with 29 CFR 2520.103-5 of the Department of Labor's Rules and Regulations for Reporting and Disclosure under ERISA (qualified institution).

Management has obtained certifications from qualified institutions as of December 31, 2022 and 2021 and for the year ended December 31, 2022, stating that the certified investment information, as described in Note 5 to the financial statements, is complete and accurate.

Opinion

In our opinion, based on our audits and on the procedures performed as described in the Auditors' Responsibilities for the Audit of the Financial Statements section—

- the amounts and disclosures in the financial statements referred to above, other than those agreed to or derived from the certified investment information, are presented fairly, in all material respects, in accordance with accounting principles generally accepted in the United States of America.
- the information in the accompanying financial statements referred to above related to assets held by and certified to by a qualified institution agrees to, or is derived from, in all material respects, the information prepared and certified by an institution that management determined meets the requirements of ERISA Section 103(a)(3)(C).

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Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of 403(B) Thrift Plan for Lowell Observatory and to meet our other ethical responsibilities in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our ERISA Section 103(a)(3)(C) audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for 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. Management's election of the ERISA Section 103(a)(3)(C) audit does not affect management's responsibility for the financial statements.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about 403(B) Thrift Plan for Lowell Observatory's ability to continue as a going concern within one year after the date that the financial statements are available to be issued.

Management is also responsible for maintaining a current plan instrument, including all plan amendments; administering the plan; and determining that the plan's transactions that are presented and disclosed in the financial statements are in conformity with the plan's provisions, including maintaining sufficient records with respect to each of the participants, to determine the benefits due or which may become due to such participants.

Auditors' Responsibilities for the Audit of the Financial Statements

Except as described in the Scope and Nature of the ERISA Section 103(a)(3)(C) Audit section of our report, our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with generally accepted auditing standards will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with generally accepted auditing standards, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of 403(B) Thrift Plan for Lowell Observatory's internal control. Accordingly, no such opinion is expressed.

- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about 403(B) Thrift Plan for Lowell Observatory's ability to continue as a going concern for a reasonable period of time.

Our audit did not extend to the certified investment information, except for obtaining and reading the certification, comparing the certified investment information with the related information presented and disclosed in the financial statements, and reading the disclosures relating to the certified investment information to assess whether they are in accordance with the presentation and disclosure requirements of accounting principles generally accepted in the United States of America.

Accordingly, the objective of an ERISA Section 103(a)(3)(C) audit is not to express an opinion about whether the financial statements as a whole are presented fairly, in all material respects, in accordance with accounting principles generally accepted in the United States of America.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

Supplemental Schedules Required by ERISA

The supplemental schedules of delinquent participant contributions and assets (held at end of year) as of and for the year ended December 31, 2022 are presented for purposes of additional analysis and are not a required part of the financial statements but are supplementary information required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under ERISA. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information included in the supplemental schedules, other than that agreed to or derived from the certified investment information, has been subjected to auditing procedures applied in the audits of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with generally accepted auditing standards. For information included in the supplemental schedules that agreed to or is derived from the certified investment information, we compared such information to the related certified investment information.

In forming our opinion on the supplemental schedules, we evaluated whether the supplemental schedules, other than the information agreed to or derived from the certified investment information, including their form and content, are presented in conformity with the Department of Labor's Rules and Regulations for Reporting and Disclosure under ERISA.

In our opinion:

- the form and content of the supplemental schedules, other than the information in the supplemental schedules that agreed to or is derived from the certified investment information, are presented, in all material respects, in conformity with the Department of Labor's Rules and Regulations for Reporting and Disclosure under ERISA.
- the information in the supplemental schedules related to assets held by and certified to by qualified institutions agrees to, or is derived from, in all material respects, the information prepared and certified by institutions that management determined meet the requirements of ERISA Section 103(a)(3)(C).

BleachFleischman PLLC

Phoenix, Arizona
February 26, 2024

403(B) Thrift Plan for Lowell Observatory

Statements of Net Assets Available for Benefits

December 31, 2022 and 2021

	<u>2022</u>	<u>2021</u>
Investments, at fair value:		
Interest-bearing cash	\$ 330,701	\$ 235,129
Pooled separate accounts	20,578,150	24,222,858
Investment contract with insurance company	<u>6,450,562</u>	<u>6,574,261</u>
	<u>27,359,413</u>	<u>31,032,248</u>
Investments, at contract value:		
Investment contract with insurance company	<u>294,393</u>	<u>297,306</u>
Receivables:		
Notes receivable from participants	42,975	68,097
Employer contributions	18,275	14,673
Participants' contributions	<u>32,027</u>	<u>30,200</u>
	<u>93,277</u>	<u>112,970</u>
Net assets available for benefits	<u><u>\$ 27,747,083</u></u>	<u><u>\$ 31,442,524</u></u>

See notes to financial statements.

403(B) Thrift Plan for Lowell Observatory

Statement of Changes in Net Assets Available for Benefits

Year ended December 31, 2022

Additions to net assets attributed to:

Investment income (loss):

Net depreciation in fair value of investments

\$ (4,548,682)

Interest

74,469

Net investment loss

(4,474,213)

Contributions:

Participants'

784,847

Employer

422,388

Rollover

230,680

Total contributions

1,437,915

Total additions

(3,036,298)

Deductions from net assets attributed to:

Benefits paid to participants

658,218

Administrative expenses

925

Total deductions

659,143

Net decrease

(3,695,441)

Net assets available for benefits:

Beginning of year

31,442,524

End of year

\$ 27,747,083

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements

Year Ended December 31, 2022

1. Description of plan:

The following description of the 403(B) Thrift Plan for Lowell Observatory (the Plan) provides only general information. Participants should refer to the Plan document for a more complete description of the Plan's provisions.

General:

The Sponsor of the Plan is Lowell Observatory (Sponsor).

The Plan is a defined contribution retirement plan with 403(b) provisions consisting of a salary reduction arrangement. The Plan covers substantially all employees of the Sponsor. The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974 (ERISA).

Participant contributions:

Under the provisions of the Plan, participants may elect to defer a portion of their pretax income upon hire. Participants are automatically enrolled in the Plan at a deferral rate of 5% of their eligible pretax income unless they elect a different amount up to current statutory limits determined annually and prescribed by the Internal Revenue Service (IRS). The Plan also permits participants to make Roth contributions and additional voluntary contributions of qualified rollovers from other retirement plans.

Employer contributions:

The Sponsor currently matches 100% of the first 5% of eligible compensation that the participant contributes. Participants become eligible for matching contributions after six months of service. Participants must also be at least 18 years of age to be eligible for matching contributions. Employer contributions are invested in the same funds and increments as directed by the participant for the participant's contributions. Contributions are subject to statutory limitations.

Participants' accounts:

Each participant's account is credited with the participant's elective deferral, employer, and rollover contributions, actual earnings thereon and charged with an allocation of administrative expenses. Allocations are based on participant earnings or account balances, as defined in the Plan document. The benefit to which a participant is entitled is the benefit that can be provided from the participant's vested account.

Vesting:

Participants are immediately vested in their elective deferral, any rollover contributions, and any employer matching contributions made to the Plan, plus actual earnings thereon.

Investment options:

Upon enrollment in the Plan, a participant may direct contributions into any of several investment options. Participants may change their investment options at any time.

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

1. Description of plan (continued):

Payment of benefits:

On termination of service due to death, disability, retirement, or election at age 59½, a participant will receive the value of the participant's vested interest in his or her account as a lump-sum distribution or may elect to take partial payments, installment payments or purchase an annuity contract, pursuant to the terms of the Plan. After-tax employee contributions made to the Plan before December 1, 2016 can be withdrawn at anytime. Participants with account balances less than \$1,000 will be paid a lump-sum distribution as soon as practicable following termination.

Participant loans:

The Plan allows for participants to obtain loans from the Plan. All loans require written spousal consent, cannot exceed 50% of the vested portion of the participant's account, excluding the portion attributable to designated Roth contributions (or \$50,000 if less), and must be a minimum of \$1,000. The loan must be repaid within five years unless the entire proceeds are used to purchase the participant's primary residence, in which case the loan may be repaid over a ten-year period. All loans will provide for the repayment of interest at rates commensurate with local prevailing rates, as determined by the Plan Administrator, on the date of the loan. The participant's individual account serves as collateral for the loan and, in the event of default, death, disability or termination of employment, the entire outstanding principal and accrued interest shall be immediately due and payable. Because the participant's account collateralizes the loan in its entirety, the credit quality of the participant is not assessed by the Plan Administrator. Unpaid loans will be treated as a taxable distribution from the Plan.

For financial reporting purposes, participants' loans are included in the statement of net assets available for benefits as notes receivable from participants.

Hardship withdrawals:

If approved by the Plan Administrator, a participant may withdraw the elective deferral portion of his/her individual account balance to satisfy any of the following immediate and heavy financial needs: unreimbursed medical expenses for qualified persons, purchase of a principal residence, to prevent eviction from or foreclosure on a principal residence, to pay for post-secondary education expenses for qualified persons, funeral expenses, or for expenses that qualify as a casualty deduction under the Internal Revenue Code (IRC).

2. Summary of significant accounting policies:

Basis of accounting:

The financial statements of the Plan are prepared using the accrual method of accounting.

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

2. Summary of significant accounting policies (continued):

Estimates:

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (GAAP) requires the Plan Administrator to make estimates and assumptions that affect the reported amounts of assets and liabilities and changes therein, and disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Investment valuation and income recognition:

The Plan's investments are reported at fair value, except for fully benefit responsive investment contracts, which are reported at contract value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. See Note 4 for discussion of fair value measurements.

Purchases and sales of investments are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividends are recorded on the ex-dividend date.

Net depreciation in the fair value of investments includes both realized and unrealized gains and losses on investments bought and sold as well as held during the year.

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. Interest income is recorded on the accrual basis. Related fees are recorded as administrative expenses and are expensed when they are incurred.

Payments of benefits:

Benefits paid to participants are recorded when paid.

Expenses:

Certain expenses of maintaining the Plan are paid by the Plan unless otherwise paid for by the Sponsor. Investment related expenses are included in net depreciation in fair value of investments.

Subsequent event:

The Plan has evaluated the events that have occurred subsequent to December 31, 2022 through February 26, 2024, the date that the financial statements were available to be issued. The Plan has no responsibility to update these financial statements for events and circumstances occurring after this date.

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

3. Federal income tax status:

The Plan has been designed to qualify under Section 403(b) of the IRC. The Plan administrator and the Plan's tax counsel believe that the terms of the Plan have been prepared to conform with the written plan requirements of Regulation 1.403(b)-3 of the IRC. The Plan is required to operate in conformity with the IRC to maintain the tax-exempt status for plan participants under Section 403(b).

GAAP requires plan management to evaluate tax positions taken by the Plan and recognize a tax liability if the Plan has taken an uncertain position that more likely than not would not be sustained upon examination by the IRS. The Plan is subject to routine audits by taxing jurisdictions; however, there are currently no audits for any tax periods in progress.

4. Fair value measurements:

The framework for measuring fair value provides 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) and the lowest priority to unobservable inputs (level 3). The three levels of the fair value hierarchy under FASB ASC 820 are described as follows:

Level 1 - Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that the Plan has the ability to access.

Level 2 - Inputs to the valuation methodology include:

- Quoted prices for similar assets or liabilities in active markets;
- Quoted prices for identical or similar assets or liabilities in inactive markets or active markets that the Plan does not have access to;
- Inputs other than quoted prices that are observable for the asset or liability;
- Inputs that are derived principally from or corroborated by observable market data by correlation or other means.

If the asset or liability has a specified (contractual) term, the level 2 input must be observable for substantially the full term of the asset or liability.

Level 3 - Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

The asset or liability's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques used need to maximize the use of observable inputs and minimize the use of unobservable inputs.

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

4. Fair value measurements (continued):

At December 31, 2022, the fair value of assets measured on a recurring basis is as follows:

	<u>Fair value</u>	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>
Investments in the fair value hierarchy:				
Investment contract with insurance company	\$ 6,450,562	\$ -	\$ -	\$ 6,450,562
Interest-bearing cash	<u>330,701</u>	<u>330,701</u>	<u>-</u>	<u>-</u>
	<u>6,781,263</u>	<u>330,701</u>	<u>-</u>	<u>6,450,562</u>
Investments measured at net asset value ^(a) :				
Pooled separate accounts	<u>20,578,150</u>	<u>-</u>	<u>-</u>	<u>-</u>
	<u>\$ 27,359,413</u>	<u>\$ 330,701</u>	<u>\$ -</u>	<u>\$ 6,450,562</u>

At December 31, 2021, the fair value of assets measured on a recurring basis is as follows:

	<u>Fair value</u>	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>
Investments in the fair value hierarchy:				
Investment contract with insurance company	\$ 6,574,261	\$ -	\$ -	\$ 6,574,261
Interest-bearing cash	<u>235,129</u>	<u>235,129</u>	<u>-</u>	<u>-</u>
	<u>6,809,390</u>	<u>235,129</u>	<u>-</u>	<u>6,574,261</u>
Investments measured at net asset value ^(a) :				
Pooled separate accounts	<u>24,222,858</u>	<u>-</u>	<u>-</u>	<u>-</u>
	<u>\$ 31,032,248</u>	<u>\$ 235,129</u>	<u>\$ -</u>	<u>\$ 6,574,261</u>

^(a) In accordance with Subtopic 820-10, certain investments that were measured at net asset value per share (or its equivalent) have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the line items presented in the statement of net assets available for benefits.

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

4. Fair value measurements (continued):

Following is a description of the valuation methodologies used for assets measured at fair value:

Pooled separate account - TIAA Real Estate Account: This account invests primarily in real estate properties and real estate related investments. Real estate holdings are valued principally using external appraisals, which are estimates of property values based on a professional's opinion. The account sometimes holds securities to facilitate liquidity. The securities are priced using values obtained from independent pricing sources. The unit value of this fund (net asset value) is calculated daily. The net asset value is used as a practical expedient to estimate fair value.

Pooled separate accounts - All Other: These funds' assets are invested in registered investment companies. The funds are valued at the net asset value of units of the separate account. The net asset value of the units is determined daily and includes adjustments for investment fees. The net asset value is used as a practical expedient to estimate fair value.

Investment contract with insurance company: Valued at fair value by the insurance company by discounting the related cash flows based on current yields of similar instruments with comparable durations considering the credit-worthiness of the issuer.

Interest-bearing cash: Consists of highly liquid instruments that generate interest income. The carrying value of interest-bearing cash is its fair value.

The preceding methods described may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although the Plan believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

A reconciliation of assets measured at fair value on a recurring basis with the use of significant unobservable inputs (Level 3) from December 31, 2021 to December 31, 2022 is as follows:

	Investment contract with insurance company
Balance December 31, 2021	\$ 6,574,261
Net realized and unrealized gains and the change in unrealized gains on assets held at year end	199,935
Purchases	221,243
Sales	<u>(544,877)</u>
Balance December 31, 2022	<u>\$ 6,450,562</u>

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

4. Fair value measurements (continued):

Net unrealized gains and the change in unrealized gains on assets held at year end included in net depreciation \$ 108,568

Investments measured using the NAV per share practical expedient:

The following table summarizes investments for which fair value is measured using the net asset value per share practical expedient as of December 31, 2022 and 2021. There are no participant redemption restrictions for these investments; the redemption frequency is applicable only to the Plan.

December 31, 2022	Fair value	Unfunded commitments	Redemption frequency	Redemption notice period
Equity funds	\$ 11,684,815	n/a	n/a	None
Fixed income funds	2,295,732	n/a	n/a	None
Target date funds	6,077,027	n/a	n/a	None
TIAA Real Estate fund	520,576	n/a	Quarterly	None

December 31, 2021	Fair value	Unfunded commitments	Redemption frequency	Redemption notice period
Equity funds	\$ 14,878,845	n/a	n/a	None
Fixed income funds	2,608,144	n/a	n/a	None
Target date funds	6,243,547	n/a	n/a	None
TIAA Real Estate fund	492,322	n/a	Quarterly	None

Equity funds: These funds consist of professionally managed investment products primarily invested in equity instruments to create a diversified pool of securities to achieve growth objectives.

Fixed income funds: These funds consist of professionally managed investment products primarily invested in debt instruments with the objective of generating income.

Target date funds: These funds consist of a blend of investments that are re-balanced over time to address retirement goals. Funds with longer horizons are invested more aggressively to achieve growth objectives while shorter-term funds are invested in more conservative securities with the objective of generating income.

TIAA real estate fund: This fund consists of direct ownership interest in real estate and indirect interests in real estate through real estate-related securities. Transfers out of this fund must generally be at least \$1,000 (except for systematic transfers, which must be at least \$100) or the entire fund balance, whichever is less.

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

5. Investment certification:

Certain information related to investments disclosed in the accompanying financial statements and supplemental schedules, including investments held at December 31, 2022 and 2021, and net depreciation in fair value of investments and interest for the year ended December 31, 2022, was obtained or derived from information supplied to the Plan Administrator and certified as complete and accurate by TIAA and CREF and Mutual of America Life Insurance Company, the insurance companies of the Plan.

6. Related party and party in interest transactions:

Certain Plan investments are managed by TIAA and CREF and Mutual of America Life Insurance Company, the insurance companies of the Plan. The Plan paid certain expenses to TIAA and CREF and Mutual of America Life Insurance Company and other service providers during 2022 related to plan administration and investment activity. These transactions qualify as exempt party in interest transactions under ERISA.

Expenses that are paid directly by the Sponsor are excluded from these financial statements. Employees of the Sponsor perform certain accounting and administrative functions for the Plan, however, no employee receives compensation from the Plan.

7. Investment contracts with insurance company:

The Plan holds a benefit-responsive investment contract with TIAA totaling \$294,393 and \$297,306 at December 31, 2022 and 2021. TIAA 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 guaranteed investment 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 but may not be less than 3%. The crediting rate is reviewed on an annual basis for resetting. The guaranteed investment contract does not permit the insurance company to terminate the agreement prior to the scheduled maturity date.

This contract meets the fully benefit-responsive investment contract criteria and therefore 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 TIAA, 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.

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

7. Investment contracts with insurance company (continued):

Certain events might limit the ability of the Plan to transact at contract value with the issuer. Such events include (1) amendments to the Plan documents (including complete or partial Plan termination or merger with another plan), (2) changes to the Plan's prohibition on competing investment options or deletion of equity wash provisions, (3) bankruptcy of the Plan sponsor or other Plan sponsor events (for example, divestitures or spin-offs of a subsidiary) that cause a significant withdrawal from the Plan, or (4) the failure of the trust to qualify for exemption from federal income taxes or any required prohibited transaction exemption under ERISA (5) premature termination of the contract. No events are probable of occurring that might limit the ability of the Plan to transact at contract value with the contract issuers and that also would limit the ability of the Plan to transact at contract value with the participants.

The Plan holds a non benefit-responsive investment contract with TIAA totaling \$6,450,562 and \$6,574,261 at December 31, 2022 and 2021. TIAA 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 guaranteed investment 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 but may not be less than 3%. The crediting rate is reviewed on an annual basis for resetting. The guaranteed investment contract does not permit the insurance company to terminate the agreement prior to the scheduled maturity date. The contract is reported at fair value in the accompanying statements of net assets available for benefits. Fair value approximates 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.

8. Reconciliation of financial statements to Form 5500:

The following is a reconciliation of net assets available for benefits per the financial statements to the Form 5500 at December 31, 2022 and 2021:

	<u>2022</u>	<u>2021</u>
Net assets available for benefits per the financial statements	\$ 27,747,083	\$ 31,442,524
Less: Employer contributions receivable	(18,275)	(14,673)
Less: Participants' contributions receivable	(32,027)	(30,200)
Difference due to rounding	<u>(2)</u>	<u>-</u>
Net assets available for benefits per the Form 5500	<u>\$ 27,696,779</u>	<u>\$ 31,397,651</u>

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

8. Reconciliation of financial statements to Form 5500 (continued):

The following is a reconciliation of interest-bearing cash and investment contracts with insurance company per the financial statements to the Form 5500 at December 31, 2022 and 2021:

	<u>2022</u>	<u>2021</u>
Interest-bearing cash per the financial statements	\$ 330,701	\$ 235,129
Investment contract with insurance company at fair value per the financial statements	6,450,562	6,574,261
Investment contract with insurance company at contract value per the financial statements	294,393	297,306
Difference due to rounding	<u>-</u>	<u>(1)</u>
Value of funds held in insurance company general account per the Form 5500	<u>\$ 7,075,656</u>	<u>\$ 7,106,695</u>

The following is a reconciliation of pooled separate accounts held by the insurance company per the Form 5500 to the financial statements at December 31, 2022 and 2021:

	<u>2022</u>	<u>2021</u>
Value of interest in registered investment companies per the Form 5500	\$ 20,057,572	\$ 23,730,536
Value of interest in pooled separate accounts per the Form 5500	520,576	492,322
Difference due to rounding	<u>2</u>	<u>-</u>
Pooled separate accounts per the financial statements	<u>\$ 20,578,150</u>	<u>\$ 24,222,858</u>

The Plan's investments in pooled separate accounts, with the exception of the TIAA Real Estate fund, are reported on the Form 5500, Schedule H as registered investment companies because a DFE Form 5500 has not been filed by the sponsor of the pooled separate accounts.

The following is a reconciliation of net investment loss per the financial statements to Form 5500 for the year ended December 31, 2022:

Net investment loss per the financial statements	<u>\$ (4,474,213)</u>
Total interest per Form 5500	\$ 283,981
Net investment gain from pooled separate accounts per Form 5500	(2,899,232)
Net investment gain from registered investment companies per Form 5500	(1,858,960)
Difference due to rounding	<u>(2)</u>
	<u>\$ (4,474,213)</u>

403(B) Thrift Plan for Lowell Observatory

Notes to Financial Statements (continued)

Year Ended December 31, 2022

8. Reconciliation of financial statements to Form 5500 (continued):

The following is a reconciliation of participants' contributions per the financial statements to Form 5550 for the year ended December 31, 2022:

Participants' contributions per the financial statements	\$ 784,847
Add: Participants' contributions receivable at beginning of year	30,200
Less: Participants' contributions receivable at end of year	<u>(32,027)</u>
Total participants' contributions per Form 5500	<u>\$ 783,020</u>

The following is a reconciliation of employer contributions per the financial statements to Form 5550 for the year ended December 31, 2022:

Employer contributions per the financial statements	\$ 422,388
Add: Employer contributions receivable at beginning of year	14,673
Less: Employer contributions receivable at end of year	<u>(18,275)</u>
Total employer contributions per Form 5500	<u>\$ 418,786</u>

9. Plan termination:

Although it has not expressed any intent to do so, the Sponsor has the right under the Plan to discontinue its contributions at any time and to terminate the Plan subject to the provisions of ERISA.

10. Risks and uncertainties:

The Plan invests in securities with contractual cash flows, such as asset backed securities, collateralized mortgage obligations and commercial mortgage backed securities, including securities backed by subprime mortgage loans. The value, liquidity, and related income of these securities are sensitive to changes in economic conditions, including real estate value, delinquencies or defaults, or both, and may be adversely affected by shifts in the market's perception of the issuers and changes in interest rate. In addition, the Plan invests in various investment securities that are exposed to 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 the amounts reported in the statements of net assets available for benefits.

403(B) Thrift Plan for Lowell Observatory

Schedule H, Line 4a - Schedule of Delinquent Participant Contributions

EIN: 86-0098918 PLAN # 001

Plan year ended December 31, 2022

Participant contributions transferred late to Plan	Total that constitute nonexempt prohibited transactions			
Check here if late participant loan repayments are included: ☐	Contributions not corrected	Contributions corrected outside VFCP	Contributions pending correction in VFCP	Total fully corrected under VFCP and PTE
\$ 91	\$ -	\$ 91	\$ -	\$ -
\$ 91	\$ -	\$ 91	\$ -	\$ -

403(B) Thrift Plan for Lowell Observatory

Schedule H, Line 4i - Schedule of Assets (Held at End of Year)

EIN: 86-0098918 PLAN #001

December 31, 2022

a)	b) Identity of issue, borrower, lessor or similar party	c) Description of investment including maturity date, rate of interest, collateral, par or maturity value	d) Cost	e) Current value
		Interest-bearing Cash:		
*	Mutual of America	General Account		<u>\$ 330,701</u>
		Pooled Separate Accounts:		
*	Mutual of America	American Century VP Capital Appreciation	\$	39,575
*	Mutual of America	American Funds IS New World Fund		83,080
*	Mutual of America	Calvert VP SRI Balanced Portfolio		72,612
*	College Retirement Equities Fund variable annuities	CREF Stock R1		2,192,012
*	College Retirement Equities Fund variable annuities	CREF Money Market R1		95,983
*	College Retirement Equities Fund variable annuities	CREF Social Choice R1		819,830
*	College Retirement Equities Fund variable annuities	CREF Core Bond R1		560,202
*	College Retirement Equities Fund variable annuities	CREF Global Equities R1		477,277
*	College Retirement Equities Fund variable annuities	CREF Growth R1		1,506,501
*	College Retirement Equities Fund variable annuities	CREF Equity Index R1		542,094
*	College Retirement Equities Fund variable annuities	CREF Inflation-Linked Bond R1		259,647
*	Mutual of America	Delaware VIP Small Cap Value Series		1,426
*	Mutual of America	DWS Capital Growth VIP		270,494
*	Mutual of America	Fidelity VIP Mid Cap Portfolio		73,744
*	Mutual of America	Fidelity VIP Asset Manager Portfolio		13,583
*	Mutual of America	Fidelity VIP Contrafund Portfolio		90,483
*	Mutual of America	Fidelity VIP Equity - Income Portfolio		79,213
*	Mutual of America	Goldman Sachs VIT US Equity Insights		274
*	Mutual of America	Goldman Sachs VIT Small Cap Equity Insights		506
*	Mutual of America	Invesco Oppenheimer VI Main Street		50,295
*	Mutual of America	MFS VIT III Mid Cap Value Portfolio		10
*	Mutual of America	Mutual of America 2015 Retirement Fund		9,425
*	Mutual of America	Mutual of America 2020 Retirement Fund		347,507
*	Mutual of America	Mutual of America 2025 Retirement Fund		1,011,041
*	Mutual of America	Mutual of America 2030 Retirement Fund		1,000,588
*	Mutual of America	Mutual of America 2035 Retirement Fund		734,702
*	Mutual of America	Mutual of America 2040 Retirement Fund		1,205,109
*	Mutual of America	Mutual of America 2045 Retirement Fund		250,178
*	Mutual of America	Mutual of America 2050 Retirement Fund		418,970
*	Mutual of America	Mutual of America 2055 Retirement Fund		755,787
*	Mutual of America	Mutual of America 2060 Retirement Fund		100,549
*	Mutual of America	Mutual of America 2065 Retirement Fund		28,313
*	Mutual of America	Mutual of America Aggressive Allocation		182,359
*	Mutual of America	Mutual of America All America Fund		15,090
*	Mutual of America	Mutual of America Bond Fund		323,319
*	Mutual of America	Mutual of America Composite Fund		83,442
*	Mutual of America	Mutual of America Conservative Allocation		560
*	Mutual of America	Mutual of America Equity Index Fund		2,960,304
*	Mutual of America	Mutual of America International Fund		8,358
*	Mutual of America	Mutual of America Mid-Cap Equity Index		169,408
*	Mutual of America	Mutual of America Mid-Cap Value Fund		14,699
*	Mutual of America	Mutual of America Mid-Term Bond Fund		132,322
*	Mutual of America	Mutual of America Moderate Allocation		94,073
*	Mutual of America	Mutual of America Money Market Fund		85,046
*	Mutual of America	Mutual of America Retirement Income Fund		9,776
*	Mutual of America	Mutual of America Small Cap Equity Index Fund		2,174
*	Mutual of America	Mutual of America Small Cap Growth Fund		120,784
*	Mutual of America	Mutual of America Small Cap Value Fund		38,114
*	Mutual of America	Neuberger Berman AMT Sustainable Equity		29,871

403(B) Thrift Plan for Lowell Observatory

Schedule H, Line 4i - Schedule of Assets (Held at End of Year) (continued)

EIN: 86-0098918 PLAN #001

December 31, 2022

a)	b) Identity of issue, borrower, lessor or similar party	c) Description of investment including maturity date, rate of interest, collateral, par or maturity value	d) Cost	e) Current value
		Pooled Separate Accounts (continued):		
*	Mutual of America	PIMCO VIT Real Return Portfolio		\$ 769,811
*	Mutual of America	T. Rowe Price Blue Chip Growth Portfolio		834,740
*	TIAA	TIAA Access Lifecycle 2010 T4		33,417
*	TIAA	TIAA Access Lifecycle 2030 T4		109,871
*	TIAA	TIAA Access Lifecycle 2040 T4		578
	TIAA	TIAA Access Lifecycle 2045 T4		20,621
*	TIAA	TIAA Access Lifecycle 2050 T4		50,369
*	TIAA	TIAA Access Equity Index T4		111,679
*	TIAA	TIAA Access Growth & Income T4		7,208
*	TIAA	TIAA Access Infl-Lnkd Bond T4		19,385
*	TIAA	TIAA Access Intl Equity T4		44,736
*	TIAA	TIAA Access Lg-Cap Gr T4		26,467
*	TIAA	TIAA Access Lg-Cap Val T4		838
*	TIAA	TIAA Access Mid-Cap Gr T4		98,435
*	TIAA	TIAA Access Mid-Cap Val T4		864
*	TIAA	TIAA Access Real Et. Secs T4		42,367
*	TIAA	TIAA Access Sm-Cap Bl Idx T4		3,012
*	TIAA	TIAA Access Sm-Cap Equity T4		77,251
*	TIAA	TIAA Access Social Ch Eq T4		1,320
*	TIAA	TIAA Real Estate		520,576
*	Mutual of America	Vanguard VIF Diversified Value Portfolio		12,517
*	Mutual of America	Vanguard VIF International Portfolio		267,930
*	Mutual of America	Vanguard VIF Real Estate Index Portfolio		140,217
*	Mutual of America	Vanguard VIF Total Bond Market		23,154
*	Mutual of America	Victory RS Small Cap Growth Equity VIP		78
				<u>\$ 20,578,150</u>
		Investment Contracts with Insurance Company:		
*	TIAA	TIAA Traditional Non Benefit Responsive		\$ 6,450,562
*	TIAA	TIAA Traditional Benefit Responsive		<u>294,393</u>
				<u>\$ 6,744,955</u>
*	Participant loans	Participant loans, bearing interest at 3.25%, collateralized by vested account balances.	<u>\$ 0</u>	<u>\$ 42,975</u>

* Represents a party in interest



Schedule of Assets Held for Investment

Total Plan Assets Under Management

LOWELL OBSERVATORY

For the Period Ending 12/31/2022

FUND ID	TICKER	INVESTMENT NAME	ENDING INVESTMENT PRICE	ENDING UNIT BALANCE	UNINVESTED CASH	ENDING MARKET VALUE	ENDING COST VALUE
BR1	TIAA#	TIAA Traditional Benefit Responsive				\$294,392.70	\$225,488.47
NBR	TIAA#	TIAA Traditional Non Benefit Responsive				\$6,450,562.27	\$4,761,678.41
X2	QCSTRX	CREF Stock R1	\$629.518200	3,482.0473	\$0.00	\$2,192,012.16	\$837,538.82
X3	QCMMRX	CREF Money Market R1	\$26.573300	3,612.0127	\$0.00	\$95,983.09	\$93,080.46
X4	QCSCRX	CREF Social Choice R1	\$289.429800	2,832.5684	\$0.00	\$819,829.70	\$411,215.70
X6	QCGLRX	CREF Global Equities R1	\$231.194400	2,064.3949	\$0.00	\$477,276.54	\$217,791.64
X7	QCGRRX	CREF Growth R1	\$268.085700	5,619.4756	\$0.00	\$1,506,501.05	\$590,060.80
X8	QCEQRX	CREF Equity Index R1	\$326.067500	1,662.5207	\$0.00	\$542,093.97	\$167,923.97
X9	QCILRX	CREF Inflation-Linked Bond R1	\$76.780200	3,381.6890	\$0.00	\$259,646.77	\$225,212.02
X1	QREARX	TIAA Real Estate	\$556.922900	934.7365	\$0.00	\$520,576.17	\$305,492.54
8K	W422#	TIAA Access Equity Index T4	\$79.333000	1,407.7279	\$0.00	\$111,679.29	\$66,679.58
8B	W413#	TIAA Access Growth & Income T4	\$86.609700	83.2265	\$0.00	\$7,208.22	\$4,597.26
8U	W432#	TIAA Access Infl-Lnkd Bond T4	\$37.297400	519.7316	\$0.00	\$19,384.64	\$16,257.87
8A	W411#	TIAA Access Intl Equity T4	\$31.107600	1,438.0988	\$0.00	\$44,735.81	\$45,198.78
8W	W434#	TIAA Access Lg-Cap Gr T4	\$95.323500	277.6573	\$0.00	\$26,467.27	\$34,637.34
8C	W414#	TIAA Access Lg-Cap Val T4	\$57.863200	14.4805	\$0.00	\$837.89	\$638.09
80	W438#	TIAA Access Lifecycle 2010 T4	\$45.881200	728.3276	\$0.00	\$33,416.54	\$24,411.68
84	W442#	TIAA Access Lifecycle 2030 T4	\$50.577600	2,172.3226	\$0.00	\$109,870.86	\$66,912.32
86	W444#	TIAA Access Lifecycle 2040 T4	\$55.441800	10.4196	\$0.00	\$577.68	\$363.64
91	W449#	TIAA Access Lifecycle 2045 T4	\$54.962400	375.1884	\$0.00	\$20,621.26	\$11,333.88
92	W450#	TIAA Access Lifecycle 2050 T4	\$54.699600	920.8320	\$0.00	\$50,369.14	\$30,444.98



Schedule of Assets Held for Investment

Total Plan Assets Under Management

For the Period Ending 12/31/2022

FUND ID	TICKER	INVESTMENT NAME	ENDING INVESTMENT PRICE	ENDING UNIT BALANCE	UNINVESTED CASH	ENDING MARKET VALUE	ENDING COST VALUE
8E	W416#	TIAA Access Mid-Cap Gr T4	\$66.744000	1,474.8201	\$0.00	\$98,435.40	\$91,304.37
8F	W417#	TIAA Access Mid-Cap Val T4	\$59.227100	14.5922	\$0.00	\$864.25	\$727.74
8S	W430#	TIAA Access Real Est Secs T4	\$43.962300	963.7145	\$0.00	\$42,367.10	\$38,617.16
8Q	W428#	TIAA Access Sm-Cap BI Idx T4	\$61.827900	48.7213	\$0.00	\$3,012.34	\$2,848.88
8G	W418#	TIAA Access Quant Sml Cp Eq T4	\$65.586300	1,177.8539	\$0.00	\$77,251.08	\$35,521.79
8D	W415#	TIAA Access Social Ch Eq T4	\$78.249800	16.8662	\$0.00	\$1,319.77	\$949.56
X5	QCBMRX	CREF Core Bond R1	\$121.227700	4,621.0715	\$0.00	\$560,201.89	\$587,035.68
Subtotal						\$14,367,494.85	\$8,893,963.43
TOTAL						\$14,367,494.85	\$8,893,963.43

Attachment to January 2022 Form 5500
Schedule H, Line 4i - Schedule of Assets (Held at End of Year)
Plan Name 403(B) Thrift Plan of Lowell Observatory
EIN: 86-0098918
Plan Number: 001

(a)	(b) identity of issuer, borrower, lessor, or similar party	(c) Description of investment including maturity date, rate of interest, collateral par or maturity value	(d) Cost	(e) Closing Value
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Aggressive Allocation		182,359
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Conservative Allocation		560
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Moderate Allocation		94,073
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Bond		323,319
.	Mutual of America	GROUP ANNUITY CONTRACT T. Rowe Price Blue Chip Growth Fund		834,740
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Composite		83,442
.	Mutual of America	GROUP ANNUITY CONTRACT Calvert Social Balanced Fund		72,612
.	Mutual of America	GROUP ANNUITY CONTRACT Delaware VIP Small Cap Value Series		1,426
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Equity Index		2,960,304
.	Mutual of America	GROUP ANNUITY CONTRACT Fidelity VIP Mid-Cap		73,744
.	Mutual of America	GROUP ANNUITY CONTRACT Fidelity VIP Asset Manager		13,583
.	Mutual of America	GROUP ANNUITY CONTRACT Fidelity VIP Contrafund		90,483
.	Mutual of America	GROUP ANNUITY CONTRACT Fidelity VIP Equity Income		79,213
.	Mutual of America	GROUP ANNUITY CONTRACT Goldman Sachs VIT US Equity Insights Fund		274
.	Mutual of America	GROUP ANNUITY CONTRACT Goldman Sachs VIT Small Cap Equity Insights Fund		506
.	Mutual of America	GROUP ANNUITY CONTRACT American Funds Insurance SNWF		83,080
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Money Market		85,046
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Mid-Term Bond		132,322
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Mid-Cap Equity Index		169,408
.	Mutual of America	GROUP ANNUITY CONTRACT MFS VIT III Mid Cap Value Portfolio		10
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Mid Cap Value		14,699
.	Mutual of America	GROUP ANNUITY CONTRACT Neuberger Berman AMT Sustainable Equity Portfolio		29,871
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America International		8,358
.	Mutual of America	GROUP ANNUITY CONTRACT Oppenheimer VA Main Street		50,295
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2015 Retirement Fund		9,425
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2020 Retirement Fund		347,507
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2025 Retirement Fund		1,011,041
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2030 Retirement Fund		1,000,588
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2035 Retirement Fund		734,702
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2040 Retirement Fund		1,205,109
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2045 Retirement Fund		250,178
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2050 Retirement Fund		418,970
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2055 Retirement Fund		755,787

Attachment to January 2022 Form 5500
Schedule H, Line 4i - Schedule of Assets (Held at End of Year)
Plan Name 403(B) Thrift Plan of Lowell Observatory
EIN: 86-0098918
Plan Number: 001

.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2060 Retirement Fund		100,549
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America 2065 Retirement Fund		28,313
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Retirement		9,776
.	Mutual of America	GROUP ANNUITY CONTRACT Vanguard VIF REIT Index Portfolio		140,217
.	Mutual of America	GROUP ANNUITY CONTRACT PIMCO VIT Real Return Institutional Portfolio		769,811
.	Mutual of America	GROUP ANNUITY CONTRACT Victory RS Small Cap Growth Equity VIP Series		78
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America All America Fund		15,090
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Small Cap Equity Index		2,174
.	Mutual of America	GROUP ANNUITY CONTRACT DWS Capital Growth		270,494
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Smal Cap Growth Fund		120,784
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Small Cap Value		38,114
.	Mutual of America	GROUP ANNUITY CONTRACT American Century VP Cap Apprec		39,575
.	Mutual of America	GROUP ANNUITY CONTRACT Mutual of America Interest Accumulation Account		330,701
.	Mutual of America	GROUP ANNUITY CONTRACT Participant Loan Fund		42,975
.	Mutual of America	GROUP ANNUITY CONTRACT Vanguard VIF Diversified Value		12,517
.	Mutual of America	GROUP ANNUITY CONTRACT Vanguard VIF International		267,930
.	Mutual of America	GROUP ANNUITY CONTRACT Vanguard Variable Insurance Fund Total Bond Market Index Portfolio		23,154