

Spring Is Coming, At Last

THE MODERATOR

B R E A C T O R M U S E U M A S S O C I A T I O N

April-June

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Spring 2023

From The Control Room

by BRMA President Robert Franklin

As the grey and brown begin the transition to a short green, I bid you welcome to this Spring update.

To get the good news out of the way first – the DOE is starting a full tour season for B Reactor Tours beginning in early April, and to start the Pre-Manhattan Tours later in the spring/early summer. BRMA is set up well to capitalize on the increased interest in tours with our gift shop located at Xenophile Books in Richland. Many thanks again to Rick Bond for all his work in relocating the gift shop last year and in working with Steve and Brian at Xenophile to keep it stocked.

As this is the Spring update it will be somewhat short as not much goes on in the off-season. But there are still Hanford-related things to see and do!

Firstly, there is an exhibit about Hanford on display at the WSU Tri-Cities Art Center. Titled “Hanford Reach”, this exhibit by artist Glenna Cole Allee explores the environmental and cultural legacies of the Hanford Site. It is on display in the CIC building until sometime in mid-summer so please check it out!

Secondly, have you attended the Hanford Challenge’s “Nuclear Waste Scholars Series”? (<https://www.hanfordchallenge.org/nuclear-waste-scholar-series>). Well you should! There is an amazing array of recorded presentations from people doing work around all things nuclear. There is something for everyone here. My new favorite is Roger Peet’s “The Wound at the Heart of the World”, about the Shiknobolwe Mine in the Congo, the very mine that produced the uranium for the

Manhattan Project. Check it out!

In a more local vein, last month I did a presentation with the WA Department of Ecology for their “Let’s Talk About Hanford” series on Black History at Hanford (for Black History Month). The presentation is drawn from my research for my second book, *Echoes of Exclusion and Resistance*, and is one of the best versions of this presentation I have ever given. If you’d like to learn more the presentation is available on YouTube at <https://www.youtube.com/watch?v=A-kFopc8Q2w>.

On the legislative/administrative side of MAPR, the Tri-Cities National Park Committee met in mid-March. Several updates were shared – people are excited for the new Oppenheimer movie coming out and the Los Alamos site is especially involved in events related to the movie (which makes sense). The NPS is working on virtual tours for some MAPR resources like Oppenheimer’s house at Los Alamos (but nothing at Hanford yet). Lastly, the Port of Benton was excited to announce that construction is wrapping up on the building to house the Hanford History Project and the Department of Energy’s Hanford Collection (these are related) as part of the first phase of the “White Bluffs Center” project. This first phase, and the planned second which would include a new MAPR visitors center and interpretative space for the USS Triton is proceeding forward in full coordination with the REACH Museum, other community partners, and in

(continued page 5)

The B Reactor Museum Assn. meets on the 2nd Monday of each month at 7 PM, in a Conference Room at the Richland Public Library, 955 Northgate Dr., Richland. Membership Meetings this quarter will be April 10, May 8, and June 12

Charitable Contributions

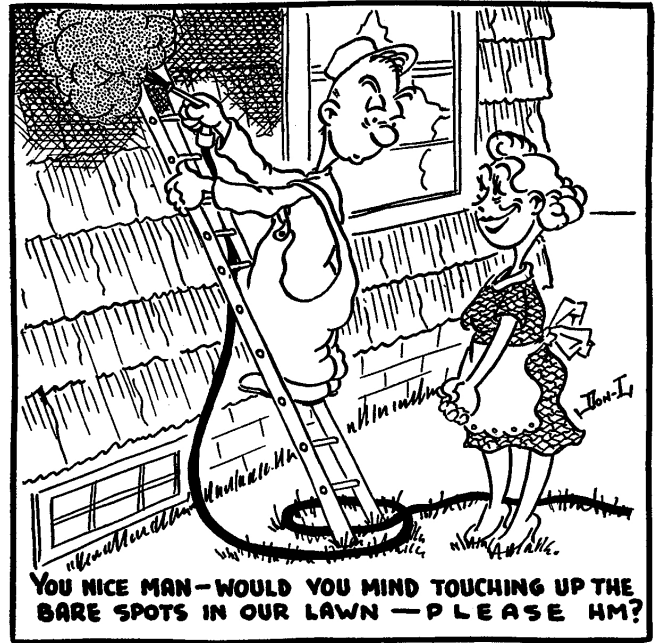
This is a Public Acknowledgement of the generous cash contributions to BRMA. The following list covers the period, January through March, 2023.

Del Ballard
Charles and Elaine Davis
John Fox ~ Cindy Kelly
Stephen Larsen ~ Dan Ostergaard
Maynard Plahuta ~ Neil Zimmerman

New Members

During the first quarter of 2023, Stephen Larson from Dover, MA, joined as a new member. One current member, Neil Zimmerman, renewed as a LIFE membership. Welcome Stephen and thank you Neil, for your switch to LIFE member! Thanks to all of you who support BRMA with your dues and additional charitable contributions.

Dupus Boomer — by Dick Donnell Contributed by Connie Estep



Membership Report By Bob Carosino, Membership Chair

2023 BRMA MEMBERSHIP DUES ARE NOW DUE. To date in membership year 2023, 49 BRMA members (including 17 LIFE members) and 2 Organizations (Atomic Heritage Foundation and The REACH) have submitted their 2023 dues.

To join the BRMA or send in your renewal, use the Form below to: Hard Copy-- Clip and Send in; E-Copy--Print, Clip and Send In.

2023 Renewal and New Member Application

Name: _____ Date: _____
Address: _____ City: _____ State: _____ Zip: _____
Phone: (h): (____) _____ (cell): (____) _____
E-mail: _____ (Please print legibly)

- Renewal New
 Individual (\$20) or Senior (age 60+ - \$10) or Student (\$10) or Life Member (one time — \$250)
(Individual Members Only)
 Society/Group (\$25) Name of Voting Representative: _____

Additional tax deductible contribution: \$ _____
Note: both Dues and Cash Contributions are Tax Deductable. (Tax ID # 94-3142387)

No goods or services were provided in exchange for your contribution
If your total enclosed contribution is \$50 or less, print a copy of this application for your records. Over \$50 will be separately receipted.

Total Enclosed: \$ _____
(Please make check out to BRMA)

Thank you; please mail this application with payment to:

B Reactor Museum Association
PO Box 1531
Richland, WA 99352

From The NPS— Ranger Updates

by Becky Burghart, MPHA Hanford Site Manager

The signs of spring are all around—daffodils pushing up from the soil, buds forming on bare tree limbs, and park staff busy planning with planning and giving programs. STEM night season is here when many area schools hosts evening STEM programs for the students and families. We’ve been able to attend so many STEM nights this year thanks to the wonderful support and enthusiasm of our volunteers. This week, Kalina Hildebrandt and Terry Andre gave presentations about the Manhattan Project and Hanford to over 400 7th graders at Ray Reynolds Middle School in Pasco. We are enjoying getting back out into schools and connecting with area youth.

In April, we are hosting another Ride with a Ranger on April 1 in collaboration with Bike Tri-Cities, the REACH, and REI. We have our first Pop Up Play Day for the year with Richland Parks and Recreation on April 6 at the Richland Community Center. On April 17 and 18 we will partner with US Fish and Wildlife Service to provide an activity at Salmon Fest. We’ll be at the Earth Day celebration at the REACH Museum on April 22. In May we are starting a new program called, Not So Secret City Walking Tour of downtown Richland. These programs

will be offered the first Wednesday of each month May through August. The programs are free and meet at the flag poll in front of the Richland Community Center. On May 6 we will be co-hosting our second Hike with a Ranger program up Candy Mountain in collaboration with rangers from Whitman Mission National Historic Site.

Meghan Murphy, lead visual information specialist, recently accepted a new permanent position as a public information officer for the Florida Department of Health. Her last day was March 23. Meghan’s contributions to the park were many including illustration of the Hanford and Los Alamos junior ranger books, leading the social media team, and designing the park’s website. Meghan work exceptionally hard her last two weeks to finish the build out of the website. She leaves behind a wonderful website the park will be able to continue to build for years to come. I encourage you take look at the website if you have not visited in a while at there is a lot of great new content: www.nps.gov/mapr.

Until next time,
Becky

QUARTERLY FINANCIAL REPORT				
By David Marsh, BRMA Treasurer				
Category	1/1/2023 1/31/2023	2/1/2023 2/28/2023	3/1/2023 3/31/2023	OVERALL TOTAL
INFLOW				
Donations	\$ 0.00	\$ 135.00	\$ 45.00	\$ 180.00
Dues	\$ 0.00	\$ 130.00	\$ 40.00	\$ 170.00
Life Member Dues	\$ 0.00	\$ 0.00	\$ 250.00	\$ 250.00
Souvenir Sales-Xenophile Books	\$ 0.00	\$1,501.66	\$ 0.00	\$1,501.66
Souvenirs Sales-Visit Tri-Cities	\$ 0.00	\$ 0.00	\$ 118.79	\$ 118.79
TOTAL INFLOWS	\$ 0.00	\$1,766.66	\$ 453.79	\$2,220.45
OUTFLOW				
Souvenir Storage-Atomik Props	\$ 65.00	\$ 65.00	\$ 65.00	\$ 195.00
TOTAL OUTFLOWS	\$ 65.00	\$ 65.00	\$ 65.00	\$ 195.00
OVERALL TOTAL	-\$ 65.00	\$1,701.66	\$ 388.79	\$2,025.45

Dave's Adventure To Los Alamos

by Dave Marsh, BRMA Member

Dave Marsh (BRMA Treasurer) is a Richland native and as such has spent many winters in the tri-cities over the past 20 plus years and has grown to dislike the cold as each year passes. Well 2023 presented an opportunity to get away from our Northwest winter for a period of time. Dave and wife Ellen have friends that live year round in the phoenix AZ area. They invited Dave and Ellen to spend part of the winter in the "Valley of the Sun". Dave and Ellen flew to phoenix in mid-February and spent five weeks looking for the sun, but this turned out to be one of the coldest in history in the Phoenix area.

Dave worked at Hanford 40 years and during that time had opportunities to travel to many DOE sites throughout the country. The one site Dave was not able to visit is one of the three legs of the Manhattan Project National Historic park, Los Alamos NM. With the opportunity to be in Arizona during a portion of the winter Dave hoped to visit Los Alamos and talk with volunteers and National Park Service staff to get a better feel for how they interact with the public and conduct their public tours at their particular site.

It seems a short overview of the Phoenix area is important to the story to describe why that goal of the trip was not possible. Arizona is known for the five C's, those being copper, cattle, cotton, citrus, and CLIMATE. Phoenix is located in the "Valley of the Sun" and is known for its year round sun and warm temperatures. The average temp in Phoenix in February and March is 70 to 80 degrees. Since 1905 the first 80 degree day in Phoenix has been February 1st with the latest being March 1st. The temps for this year were a high of 76 in early January, a high of 79 on February 12th and a high of 76 on February 20th and February 26th. Dave and Ellen arrived in Phoenix on February 12 and stayed until March 16th. March temps were below 70 until March 5th. Needless to say this is not the type of weather that Dave and Ellen had anticipated.

With regard to a visit to Los Alamos it is necessary to provide a bit of geography to understand the difficulties of a visit to Albuquerque and Los Alamos during our stay in Phoenix. Albuquerque is located in North Central New Mexico approximately 560 miles east of Phoenix. The major roadways between Phoenix and Los Alamos are Interstate 17 north to

Flagstaff AZ and Interstate 40 E to Albuquerque NM. Please note that Phoenix is located in the "Valley of the Sun" at an elevation of approximately 1400 feet above sea level. Flagstaff is located at 6910 feet above sea level. Los Alamos is located at 7320 feet above sea level and Albuquerque is located at 5312 feet above sea level. February 2023 was the 5th snowiest February on record for Northern Arizona.

During the winter of 2023 as of March 1st, snowfall in Flagstaff was 118.9 inches which is more than 50 inches above the average for this time of year. It snowed almost every day in Northern Arizona until about March 10th. As a result of this above average snowfall, Dave was not able to visit Los Alamos because the roads, namely I-17 and I-40 were closed most of the end of February and early March due to snow. To complicate the planned visit the visitor center at Los Alamos is open Sunday, Monday, Friday, and Saturday. The "Behind the Fences" tour is only offered a few times per year and the Bradbury Museum is open six days a week but closed on Mondays. Dave had contacted the Los Alamos National Park Service (NPS) staff to identify staff at Los Alamos that would be available to contact during his visit. Our local Superintendent Becky Burghart provided NPS contacts for Dave to meet and talk with while visiting the Los Alamos National Laboratory (LANL) site. Much to the disappointment of Dave we were not able to visit the Los Alamos site or the Bradbury museum due to the weather. It is evident that a better understanding of the weather this particular winter in northern Arizona would have allowed for this trip to be possible.

Anyone wishing to visit the site should do a bit more homework than Dave in order to be able to get to the site and be in the locale at the appropriate times to visit the different facets of the Los Alamos leg of the National Historical Park sites including: The behind the fences tour, and the Bradbury museum. It appears that another time of the year is a better choice to actually visit the Los Alamos area.

We have included a couple of pictures of the massive snowstorm that adversely affected residents of Northern Arizona and impacted travel on I-17 and I-40.

All I can say is Better Luck Next Time.



40 Inches of snow closes Interstate 40 in Northern Arizona



Los Alamos digging out from snow!

The Fabrication And Lay-up Of B Reactor Graphite

By Burt Pierard, BRMA Historian

One of the most amazing accomplishments of the Manhattan Project was the expansion of a lab experiment (Fermi's CP-1) into a 40-foot cube (B Reactor) at atomic tolerances and purity of basic materials, in only 10+ months (actual site construction). Obviously, a lot of pieces required prefabrication and movement to the 105-B building for installation.

The 2,200-ton Graphite Core was 36 ft. wide x 36 ft. tall x 28 ft. deep (front to back) and made up of about 75,000, 4x4x48 inch blocks of graphite (number of blocks was higher because many smaller and different sizes were used to build the pile). The first obstacle that had to be overcome was the purity and volume that could be developed by the few graphite vendors. The reactor specification for purity was unprecedented. The solution was graphite supplied under various purities from several different vendors. The highest purity graphite was milled for the center of the core (where reactivity is the greatest) and then concentric circles of lesser purity out to the edges where the reflector layer is made up of the lowest purity graphite. DuPont Inspectors at the vendors' plants would supervise the purity testing and numbering the rough blocks before shipping.

The most unusual feature in machining this graphite was in the tolerances which were required. A few examples of tolerances required: cross-sectional of the completed blocks – plus or minus .005" (5 thousandths); squareness - .004"; length - .006"; and the diameter of

the longitudinal drilled hole – plus .003" and minus .000". These tolerances were less than the thickness of a sheet of paper. These tolerances were essential to maintain alignment of the process tubes after 100 plus layers and 7 blocks deep per tube when the graphite was laid up. DuPont determined that modified woodworking tools were best for the speed of production, but the graphite was abrasive to the cutters and required frequent re-sharpening by the machinists, which was acceptable.

During December, 1943, the first 315 tons of graphite were milled for the 305 building Test Reactor in the 300 Area. During that period, it was determined that the practice of inspection of each piece individually was a real bottleneck, which was threatening the schedule for B Reactor and the whole project. DuPont's solution was to develop an automatic inspection machine which reduced inspection time by 90% and allowed an assembly line operation.

During February 1944, DuPont was transferring Machinist/Tool Makers to man the TC-101 Building, nearing completion, and installation of equipment, to mill all the graphite for B Reactor. Enter John Rector from DuPont's Kansas City Remington Arms plant Tool Room, on February 29, 1944, to machine the graphite and work on the tooling for the machinery. He said, in an Oral History interview, he had been transferred to Hanford "for a three-month job." He spent his first two weeks at the temporary machine shop at 200 West waiting for the 101 Building completion. This also gave him time to learn about the graphite and the machinery. His only previous contact with graphite had been as a powder lubricant freeing key locks.

After the graphite blocks completed processing in the 101 Building, they were placed in a sample lay-up on a standard cast-iron base, 25 layers at a time, to determine that cumulative tolerances were neither too large nor too small. Then upon takedown, each block was assigned a number to denote its exact location in the lay-up. It was then wrapped in plastic and placed on a pallet for transport to the reactor. The lay-up in B Reactor was completed on June 1, 1944 (fulfilling the 3 month job promise to Rector).

For the Final Exam on the alignment of the graphite blocks, they checked if a 40-foot aluminum process tube would pass through the 28 feet (7 - 4-foot blocks), front to back. Refer to the Lt. Col. Matthias Oral History for the answer (who was on site for the test). According to Matthias, when they peeled the paper off the tube and inserted it in the hole, it hung up about halfway. When they pulled it out and looked it over, one of the workers observed that there was some aluminum oxide coating. When it was polished, they tried again. It slipped right in and it would easily slide back and forth with just one hand!

From The Control Room (continued from Page 1)

furtherance of STEM Tourism in the Tri-Cities. Exciting stuff! All this historian asks is don't forget about the Humanities! Oppenheimer certainly didn't.

Lastly, our treasurer Dave Marsh is soon set to release our 2022 BRMA Annual Report. I'm sure that shortly following will be the long-awaited History of the BRMA. Dave has been working diligently with Del Ballard, Founder, to compile that document. Thank you, Dave!

As a personal note I want to thank you all for reading and staying engaged with the BRMA. I don't want to get too personal here but I have been struggling with work-life balance in the past few months as the cumulative effects of my career, raising my two wonderful children, and trying to have time to myself have come up against a variety of other responsibilities. Why bring this up? Well I want it to be known that this is my official notice that 2023 is the last year I will serve as President of the BRMA. You are all hereby informed – I know there is a great President somewhere out there reading these very words. To that person: you'll do a great job, just give it a try.

Robert Franklin

From Our Gift Shop By Rick Bond, BRMA Products and Sales

Since the MAPR-B Reactor tours do not run in the winter months we did not expect to make many sales in the January through March 2023 period. While sales were down significantly, I am pleased to report that we sold much more than expected. In January we did about \$460 in sales, in February we did about \$280 in sales, and in March we expect to do about \$250 in sales. These numbers are far higher than expected and it is due in large part to the fact that our gift shop is located in the Xenophile Books store which is open throughout the year to offer our gift shop products for sale, as well as the thousands of books and various other items that they sell. We owe a great deal of thanks to Steve Woolfolk and Brian Sheldon for supporting BRMA and our gift shop. Just as a reminder, they will generally be at the store from around 10 am until 4:30 pm Monday through Saturday, year-round. Please keep them in mind and support them whenever and however you can as they provide a great service to BRMA.

In addition to our Xenophile Books gift shop sales we continue to have great support from The

Octopus' Garden which is located in Uptown Richland. We also sell some of our products at the Tri-City Visitor's Center and The Reach Museum so please support these locations any way you can.

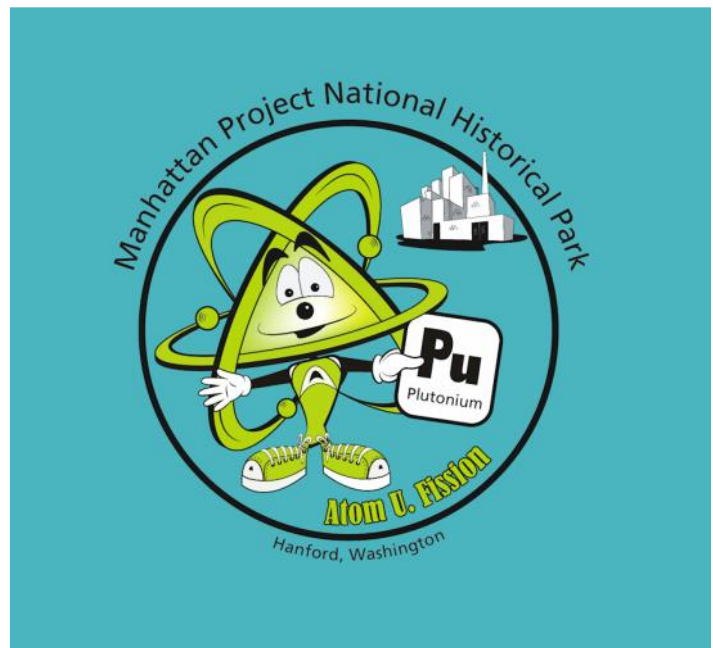
Every year the National Park Service issues a National Parks Stamp Series. The Manhattan Project NHP is the featured National Stamp on the 2023 Passport To Your National Parks® Stamp Series (See Picture 1). You can purchase the set in our MAPR/BRMA gift shop located in Xenophile Bibliopole bookstore.

I am currently working on procuring kids T shirts to be offered for sale in our gift shop. The T shirt will feature Atom U. Fission, the signature character of the MAPR/B Reactor Junior Ranger Program (See Picture 2). I am also working on procuring some "Atomic" earrings and necklaces. These items should be offered for sale in our gift shop in the near future. Much thanks to Jan Jones and Teri Andres for helping to develop these items.

Please always remember that 100% of the profits from our gift shop go toward supporting our local unit (Hanford B Reactor) of MAPR. The gift shop proceeds are used to fund interpretative projects at the reactor and many other reactor related projects.

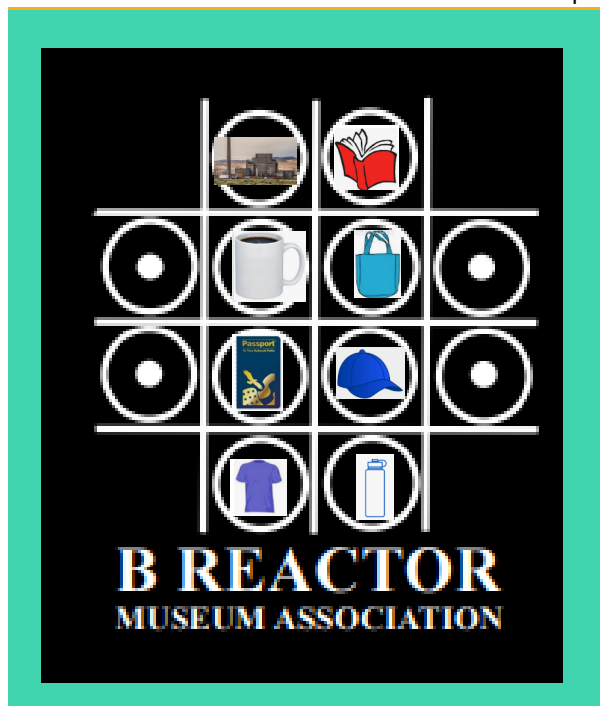


Picture 1. National Parks 2023 Stamp Series



Picture 2. Tee Shirt Design

Support the Park* Buy Unique Gifts! **B Reactor & Manhattan Project**



**Books Patches National Park Passports/2023 Stamps Caps
T-Shirts Lapel Pins Water Bottles Magnets Pens
Medallions Tumblers Stickers Mugs Postcards Totes
plus B Reactor novelty items and more!
Check both stores for availability.**

*Proceeds from all the above BRMA displayed items sold at the stores below benefit the exhibits and programs of the Manhattan Project National Park at Hanford.



The Octopus' Garden

"We have fun stuff!"

Books, incense, toys, Gnomes, socks, candles, buttons, bobble-heads, lunch boxes, t-shirts, games, cards funky home décor, keychains, rubber chickens, posters, and oh, so much more.

**1327 George Washington Way
Uptown Richland
509-946-0077**

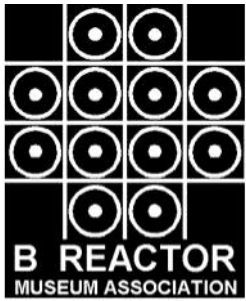
Xenophile Bibliopole & Armorer Chronopolis

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509-375-7505**





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