

ANS – THD Division

Program Committee Virtual Meeting

June 4th, 2023

Attendees (32):

| | | |
|--|-----------------------------|--------------------------|
| Dillon Shaver (ANL, Chair), | Emre Tatli (WEC), | Shuichiro Miwa (UTokyo), |
| Izabella Gutowski (OrSU, Assist. Chair), | Fan-Bill Cheung (PSU), | Steve Bajorek (NRC), |
| Igor Bolotnov (NCSU), | Guanyi Wang (ANL), | Subash Sharma (UMass-L), |
| Bao-Wen Yang (Delta), | Hitesh Bindra (Purdue), | Sunming Qin (INL), |
| Robert Martin (BWXT), | Jon McWhirter (TerraPower), | Trevor Howard (OrSU) |
| Annalisa Manera (ETH), | Joseph Seo (TAMU), | Xiaodong Sun (UM), |
| Bin Han (Delta), | Juliana Duarte (UW-M), | Yassin Hassan (TAMU), |
| Caleb Brooks (UIUC), | Jun Fang (ANL), | Yong Hoon Jeong (KAIST), |
| Cheng Xu (IATF), | Jun Liao (Westinghouse), | Yue Jin (U-Missouri) |
| Donna Guillen (INL), | Nadish Saini (ANL), | |
| Drew Ryan (Bettis), | Shanbin Shi (RPI), | |

1. Opening

Opening by Dr. Shaver. We are discussing technical sessions for the meeting as well as ANS-sponsored TH meetings.

2. Approval of Meeting Agenda

The Draft Meeting agenda has been provided

MOTION to approve: Bao-Wen Yang

SECOND by: Jun Liao

NO DISCUSSION

APPROVED UNANIMOUSLY

3. Approval of Minutes from 2022 Winter Meeting

Draft minutes from 2022 Winter meeting were discussed. Minutes were posted late on the website. If errors are found, they can be communicated via email.

MOTION to approve: Steve Bajorek

SECOND by: Xiaodong Sun

NO DISCUSSION

APPROVED UNANIMOUSLY

4. Update on THD session for ANS 2023 Annual Meeting

Dr. Shaver provided an update on the ANS 2023 Annual Meeting.

8 sessions, 1 panel.

34 submissions (with 2 rejections). There are 32 accepted submissions. Trend on submissions is downward. Two NURETH's back-to-back. Maybe not a cause for concern. Lowest in the last 10 years.

DISCUSSION:

Bob Martin: indeed – NURETH may influence this.

Bao-Wen Yang: do we have statistics by country or industry/academia?

Bob Martin / Bao-Wen Yang: virtual participation options may have discouraged some to submit the papers. Comparing historical trends historically will be important. Trevor: indeed. Donna Guillen: what about other divisions?

Dillon: Submissions to ANS in general are up for this meeting. paper sources: 23 / 9 / 4 (from univ, labs, industry). Bao-Wen / Jun Liao: should encourage the industry. Especially through the panel format.

Igor: should have session organizers to be more active to solicit paper submissions to their sessions.

Bao-Wen: can also work with ANS to encourage attendance without transaction submissions to be better for wider participation.

Steve Bajorek: lightning talk idea worked fairly well for NURETH-20.

Dillon (continuing): 3.3 reviews per reviewer, would like to thank the reviewers! Including the top 3 reviewers with 10 or more reviews. Session chairs are identified, two co-chairs per session.

5. Update on THD Program for the upcoming 2023 Winter Meeting

Dr. Shaver presented the program for the upcoming meeting: 9 sessions are planned (standard line up), + 2 panels. Submissions are due on June 26, 2023.

DISCUSSION:

Dillon: Please encourage submissions to your sessions. The deadline is strict.

6. Planning for the future 2024 Annual Meeting

The conference is planned for June 9-12, 2024 in Las Vegas, NV.

Proposed sessions:

- General TH: Sharma / Bindra
- Computational TH: Bolotnov / Wang
- Experimental TH: BW Yang / Ryan
- Experimental Two-phase: Jin / Sun
- Computational Two-phase: Saini / Fang
- Advanced Reactor TH: Shi / Sharma
- TH of SMRs: Yang /
- Hi-2-Lo Multiscale Modeling: Tatli / Shaver
- Thermal Striping: McWhirter / Qin

- Fluid-Structure Interaction and Multiphysics Coupling: Howard / Saini
- Machine Learning / AI for TH: Bindra / Duarte / Guillen / Hassan
- V&V UQ of ML (P) – NISD*: Shaver / Merzari / Bolotnov / Hassan
- TH Activities in Industry (P/Lightning) – Liao/McWhirter/Tatli

The meeting participants had a pro-longed discussion on the specific special sessions, including the coordination with the embedded topical meetings ARS and ICAPP to be held during the 2024 ANS Annual meeting. It was suggested to reach out to Travis Knight as the ICAPP general chair before finalizing the sessions. Bao-Wen: Since the deadline for submitting the final program is not due, suggest having a separate meeting between PC and Industrial Liaison and other interesting parties to further explore the format (panel or Lightning talk or a special workshop, etc.), subjects, and other aspects of the TH Activities in Industry.

7. NURETH 20 Update

Dr. Bajorek gave an update on the NURETH-20 organization. The conference is planned for Aug 20 – 25, 2023, Washington DC.

Opening plenary, 40-years of NURETH. 500 papers, 8 tracks, 70 sessions. 11 Keynotes.

See details in attachment.

DISCUSSION:

Bob Martin: we should advertise the NURETH, 40th anniversary better on our website. Might want to bring this up on EC.

Steve Bajorek: Agreed. Should also better build the e-mail database for authors contributed to recent NURETH meetings.

Trevor: we advertise via slider. Would be good to add a general meetings place. If material is provided to me – I'll be happy to add that to the THD website.

Bob Martin: Bill – did we write something up for the 40th anniversary?

Bill Cheung: yes – we have – will forward.

Yassin Hassan: let's thank Steve and recognize him for his hard work on NURETH-20 organization!

8. NUTHOS-14 update

Dillon: Anyone ready to update on this? (We don't have colleagues present who planned to update us on that).

Bao-Wen: Vancouver, CA, August 25-28, 2024. Perhaps more details on the EC meeting next week. Bao-Wen encouraged all THD members to participate in organizing and attending this first NUTHOS in North America.

9. ATH'24 Update

Dr. Shaver gave an update about the conference. Same as before: all is planned / part of the program.

Publication plan is approved by ANS.

Three chairs for the technical sessions + a lot of assistant technical chairs.

December 2023 – call for papers will be posted.

August 8th, 2024 – final paper deadline. Will accept both transactions and full papers.

10. NURETH-21 Update

Prof. Jeong. Deadlines: October 24, 2024, Full papers January 31, 2025; Final papers May 2nd, 2025.

Busan, Korea, August 31st - September 5th, 2025.

11. Old business

Dillon: just to mention – we continue our engagement with international liaison and industry liaison.

Bao-Wen: thank you Dillon and Iza for leading PC, looking forward to the Town Hall meeting next week.

12. New business:

Dillon: Town hall meeting – please attend next week!

PC nominations are always encouraged.

No other new business.

Dr. Shaver: motion to adjourn?

Moved: Dr. Bao-Wen Yang; Seconded by Nadish Saini.

Meeting was adjourned.

Appendix 1: PC Agenda

PROPOSED AGENDA

American Nuclear Society – Thermal Hydraulics Division
Program Committee Virtual Meeting
2023 ANS Annual Meeting
11:00 AM US Eastern Daylight Time (EDT), Sunday, June 4th, 2023
Zoom:

<https://oregonstate.zoom.us/j/95178187343?pwd=MTZpZlA5ZFZLc1Z4YVkyekx4ekJGUT09>

Password: THDPC2023

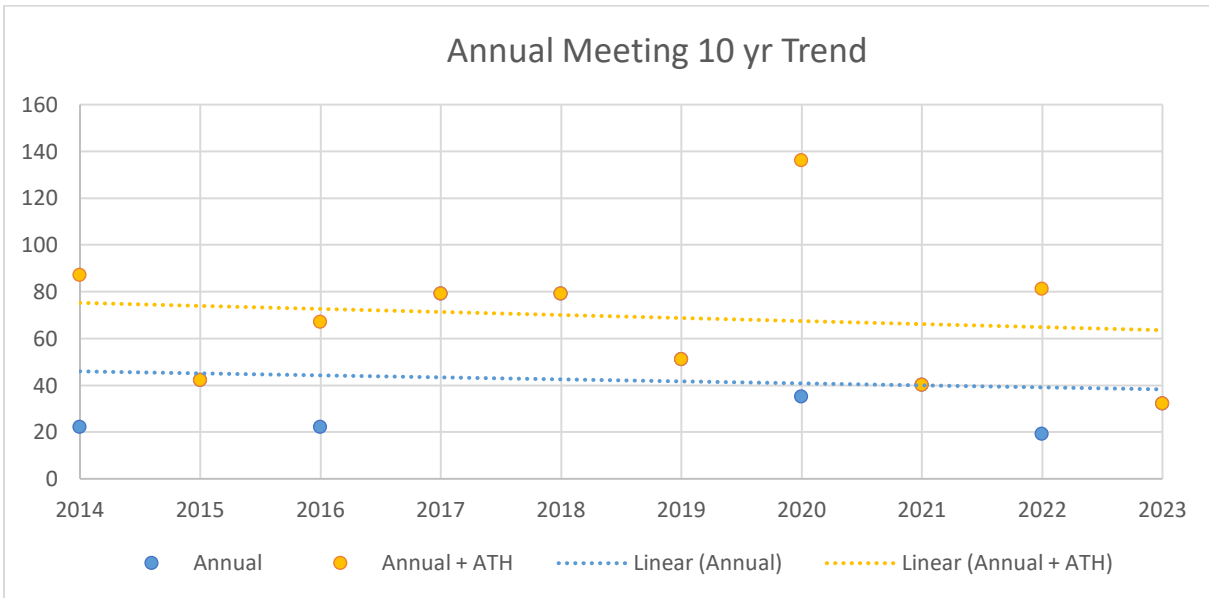
1. **Opening** (Shaver/Gutowska)
2. **Approval of Meeting Agenda** (All)
3. **Approval of Minutes** from 2022 Winter Meeting (All)
4. **Update on THD Sessions for the ANS 2023 Annual Meeting** (Shaver/Gutowska)
 - a. General Meeting: Submission Statistics, Reviews, and Session Assignments
5. **Update on THD Program for the 2023 Winter Meeting** (Shaver/Gutowska)
November 12 – 15, 2023, Washington, DC
 - a. General meeting: Announced Sessions, Deadlines/Submittal Status
6. **Planning for the Future 2024 Annual Meeting** (Shaver/Gutowska)
June 9 – 12, 2024, Las Vegas, NV
7. **NURETH-20 Update** (Bajorek)
August 20 – 25, 2023, Washington, DC
8. **NUTHOS-14 Update** (Novog/Merzari)
August 25 – 28, 2024, Vancouver, BC, Canada
9. **ATH'24 Update** (Shaver/Yang/Pointer)
November 17 – 21, 2024, Orlando, FL
10. **NURETH-21 Update** (Jeong/Song)
August 31 – September 5, 2025, Busan, Korea
11. **Old Business** (All)
12. **New Business** (All)

Appendix 2: PC Report

2023 ANS Annual Meeting

D. Shaver and I. Gutowska

A total of 32 submissions are included in the sessions sponsored and organized by the Thermal Hydraulics Division at the ANS 2023 Annual Meeting. The number is below expectations for an annual meeting, and we note the beginning of a downward trend. However, we also recognize significant overlap with NURETH meetings in both 2022 and 2023. In this annual meeting we will host a total of 8 sessions, 1 panel and 7 standard presentation sessions. Note that the standard presentations are 15 minutes + 5 minutes Q&A. The graph below shows the 10-year trends for the ANS Annual meetings.



Most of the accepted summaries were submitted from universities: 27 summaries included at least one coauthor from a university, 9 summaries included at least one coauthor from a national laboratory, and only 4 summaries included at least one coauthor from industry. Note that a summary can include coauthors from multiple sources.

Reconciled review recommendations for the submissions are as follows:

| | | |
|-------------|----|--------|
| | 32 | Accept |
| | 2 | Reject |
| <hr/> Total | 34 | |

After our rigorous review process, 2 submissions out of 34 received were rejected. We note that the trend for rejection rates (R/R+R) is usually at roughly 20% and this year it is lower, at 6%. This is down from 9% at the previous winter meeting. Although, due to the low number of summaries, this may not be significant. As a note, we encourage the authors to respect the process and the time that the reviewers dedicate to evaluating the summaries and to strictly follow the ANS template and submit summaries with all the required sections.

Overall, the review participation was sufficient. All the papers received adequate review on a timely basis. *Many thanks to our dedicated reviewers!* The distribution is as follows:

There were 112 review recommendations that were coordinated from 34 reviewers for an average of 3.3 reviews per reviewer. The average number of reviews per paper was also 3.3, which is slightly above average. We had about 18% of the reviewers participating in the process, which is consistent with our typical average of around 20% participation. The reviewers' support is much appreciated!

Reviewer participation over the last decade is as follows:

| Year | Location | Number of Reviews | Number of reviewers |
|-------------|---------------------------|--------------------------------|---------------------|
| 2023 | Indianapolis | 112 | 34 |
| 2022 | Phoenix | 185 | 44 |
| 2022 | Anaheim (inc. ATH) | 217 | 54 |
| 2021 | D.C.(Hybrid) | 164 | 38 |
| 2021 | Providence, R.I. (Online) | 136 | 37 |
| 2020 | Chicago (Online) | 278 | 43 |
| 2020 | Phoenix (Online) | 85 | 21 |
| 2019 | D.C. | 258 | 40 |
| 2019 | Minneapolis | 127 | 24 |
| 2018 | Orlando | No general sessions (ATH only) | |
| 2018 | Philadelphia | 188 | 32 |
| 2017 | D.C. | 222 | 28 |
| 2017 | San Francisco | 264 | 39 |
| 2016 | Las Vegas | 337 | 45 |
| 2016 | New Orleans | 87 | 20 |
| 2015 | San Antonio | 135 | 28 |
| 2015 | Anaheim | 212 | 33 |
| 2014 | Reno | 80 | 17 |
| 2014 | D.C. | 284 | 29 |
| 2013 | Atlanta | 137 | 23 |

The review process was made possible by valuable contributions from:

| | | | | | |
|----------------|----|-------------------|---|-------------------|---|
| Yoon, Su-Jong | 14 | Mistreanu, Adrian | 8 | Guanyi, Wang | 4 |
| Ryan, Drew | 13 | Liao, Jun | 5 | Gutowska, Izabela | 4 |
| Riznic, Jovica | 10 | Roelofs, Ferry | 5 | Shirvan, Koroush | 4 |
| Lu, Cihang | 8 | Zou, Ling | 5 | Brooks, Caleb | 3 |

| | | | | | |
|--------------------|---|---------------------|---|---------------------|---|
| Cheung, Fan-Bill | 2 | Chen, Minghui | 1 | Shi, Shanbin | 1 |
| Frederix, Edo | 2 | Howard, Trevor Kent | 1 | Sun, Xiaodong | 1 |
| Kong, Ran | 2 | Iskhakov, Arsen | 1 | Weinmeister, Justin | 1 |
| Liu, Yang | 2 | Mignot,Guillaume | 1 | Yang, Bao-Wen | 1 |
| Lomperski, Stephen | 2 | Petrov, Victor | 1 | Yilgor, Ilyas | 1 |
| Saini, Nadish | 2 | Qin, Sunming | 1 | Zhang, Sheng | 1 |
| Sharma, Subash | 2 | Sabharwall, Piyush | 1 | | |
| Carasik, Lane | 1 | Sarikaya, Baris | 1 | | |

The technical sessions have been slightly modified from the original call based on actual submissions. For this meeting, the CFD session was created from the proposed High-Fidelity TH and computational TH sessions, the Two-Phase Fundamentals session was reorganized into Experimental Two-Phase Flow, and we received enough submissions to Advanced Reactor TH focusing on SFRs to spin off its own session. The final technical session schedule, including panels is as follows:

| Session | Chairs | # of papers | Time Slot (EDT) |
|--|--------------------|-------------|----------------------|
| Thermal Hydraulics Needs, Challenges and Opportunities in the Advanced Reactor Demonstration Program | Ibarra, Pointer | panel | Monday 1:00pm |
| Computational Fluid Dynamics | Shaver, Yuan | 5 | Monday 3:15pm |
| General Thermal Hydraulics | Bindra, Sabharwall | 4 | Tuesday 10:00am |
| Experimental Thermal Hydraulics | Guillen, Gutowska | 4 | Tuesday 1:00pm |
| Experimental Two Phase Flow | Sun, Bang | 5 | Tuesday 3:15pm |
| Advanced Reactor Thermal Hydraulics | Liao, Seo | 5 | Wednesday 8:00am |
| Thermal Hydraulics of Sodium Fast Reactors | Sharma, Shaver | 4 | Wednesday 10:00am |
| Computational Thermal Hydraulics | Howard, Carasik | 5 | Wednesday 1:00pm |

Finally, our next meeting will be held in Washington, DC. The call for papers is open and our program includes the sessions in the table below. The meeting will be held November 12th-15th and summaries are due June 26th.

| Session | Organizer(s) |
|--|-------------------|
| General TH | Saini/Guillen |
| Experimental TH | Carasik/Shi |
| Computational TH | Sun/Mignot |
| Fundamentals of Two-Phase Flow | Liu (VA Tech)/Zou |
| Advanced Reactor TH | Sharma/Merzari |
| YPTHRC | Wu/Zimmer |
| Advances in Materials Science and TH for Lead-Cooled Fast Reactors | Liao/MSTD* |
| Fuel Fragmentation, Relocation, and Dispersal | Mignot/Yoon |
| TH for Accident Tolerant Fuels | Bajorek/Yang |
| Highlights from NURETH-20 (P) | Martin/Bajorek |
| TH Activities and Opportunities in Industry (P) | Hassan |
| In Memoriam: Dr. Hans Fauske | Yang/Liao |

*To be cosponsored

The program committee thanks everyone who volunteered to organize or chair a session for this meeting. As a reminder, session organizers are responsible for stimulating summary submissions, assisting with reviews, and coordinating session chairs.

Additional Notes:

- All paper presentations are 20 minutes each (15-minute talk + 5-minute Q&A and transition to the next speaker). Session chairs are responsible for keeping speakers on time.
- If you are chairing a session, coordinate with your co-chair prior to the start on which speakers each will introduce and collect a brief bio for each speaker for their introduction.
- In the event of a no-show, do NOT skip to the next presenter. Try to keep attendees engaged with discussion or offer a 20 minute break in order to keep with the program schedule.

NURETH-20

Washington, DC, USA
August 20-25, 2023

Status Update: May 30, 2023



Opening Plenary

- Opening Plenary to include confirmed speakers:
 - Katie Huff (DOE)
 - Rita Baranwal (W)
 - Jose Reyes (NuScale)
 - Koji Okamoto (JAEA)
 - Per Peterson, Jess Gehin, Sama Bilbao y Leon (pending)
- “40-Years of NURETH” to recognize T/H pioneers:
 - Neil Todreas, Mike Podowski,
 - Richard Lahey, Donald Rowe.

Paper & Session Summary

- Approximately 500 technical papers accepted in 8 different Tracks with 70 technical sessions
- Of significant interest:
 - 11 Keynote Presentations
 - 3 THD Award Presentations
 - 8 Panel Sessions
 - 2 Sessions with 20 “Lightning Talks”
- Registration is open. China is a problem.

NURETH-20 Session Schedule

The screenshot displays the NURETH-20 Session Schedule website. The main content is a grid with 11 rows representing rooms (Room 1 to Room 11) and columns representing dates from Monday, August 21 to Thursday, August 24. Each cell in the grid contains a session title and a small icon. To the right of the grid is a vertical sidebar with colored buttons for different tracks: Fundamental Thermal Hydraulics (red), Computational Thermal Hydraulics (orange), Experimental Thermal Hydraulics (yellow), Verification, Validation and Uncertainty Quantification (green), Water Cooled Reactor Operations and Accident Analysis (teal), Severe Accidents (light blue), New and Advanced Reactors (blue), Special Topics (purple), Panel Sessions (pink), and Lightning Talks (magenta). The website's browser interface is visible at the top, and the Windows taskbar is at the bottom.

Workshops & Social Events

- Sunday August 20 to hold 4 workshops on analysis codes:
 - ✓ [Multiphysics for Advanced Reactors using the MOOSE Ecosystem](#)
 - ✓ [Nek5000](#)
 - ✓ [CODE SATURN - Overview of Capabilities and Example Applications](#)
 - ✓ [SAM System Analysis Code for Advanced Reactor Applications](#)
- Social and Technical Events
 - NSS Savannah and John Brown Tour (Sun.)
 - Evening at the French Embassy (40 -years of NURETH) (Mon.)
 - Lecture and Tour of GWU (Tues.)
 - NRC Emergency Op Center and NIST Neutron Facility (Fri.)

NURETH-20 Leadership Team

- Honorary Chairs: Y. Hassan (TAMU), H. Ninokata (PdM)
- General Chair: Ray Furstenau (NRC)
- General Co -Chairs: Elia Merzari (PSU), Bao -Wen Yang (DEDQ)
- Technical Program Chair: Steve Bajorek (NRC)
- Technical Program Co -Chairs: Igor Bolotnov (NCSU), Analisa Manera (PSI)
- Honors & Award Chair: Xiaodong Sun (UM)
- Local Section Chair: John Kelly (ANS President Emeritus), P. Bardet (GWU)
- Technical Track Chairs: P. Bardet, G. Ricciardi, Igor Bolotnov, S. Benhamadouche , X. Sun, B -W Yang, J. Zhang, J. Kaizer, C. Frepoli, C -H Song, F. Mascari, D. Luxat, R. Martin, R. Hu, P. Sabharwall, K. Muftuoglu, C. Brooks

Appendix 4: NURETH-21 update:



www.nureth-21.org

SAVE the DATE

NURETH-21

21st International Topical Meeting on Nuclear Reactor Thermal Hydraulics

August 31 (Sun) - September 5 (Fri), 2025
BEXCO · Busan, Korea

Invitation to *BUSAN, Korea*

The Thermal Hydraulic Division of Korean Nuclear Society invites you to NURETH-21, which will be held in Busan in 2025, where about half of nuclear power plants and leading universities are located.

Conference Organizers

- General Chair *Dr. Chul-Hwa Song, KAERI*
- Technical Program Chair *Dr. Ki Yong Choi, KAERI*
- Organizing Comm. Chair *Prof. Byoung Jo Yun, Pusan National University*

Important Dates

- Abstract submission due *October 25, 2024*
- Full paper submission due *January 31, 2025*
- Final paper submission due *May 2, 2025*

Contact Us
If you have any inquiries, voluntary suggestions or possible sponsorship opportunities, please contact info@nureth-21.org.

Hosted by  **한국원자력학회**
KOREAN NUCLEAR SOCIETY

Sponsored by  **ANS** and International Nuclear Societies

Appendix 5: Meeting Chat (through Zoom feature)

08:02:16 From Juliana P. Duarte to Everyone:

good morning!

08:04:06 From Subash Sharma to Everyone:

Good Morning !!

08:09:59 From Trevor Kent Howard to Everyone:

Add the zoom link to the THD page as well now so if there are any late comers, they can access at one point.

08:11:31 From Trevor Kent Howard to Everyone:

ANS prefers not to have zoom links public for extended periods of time to avoid zoom bombing.

08:12:28 From Jon McWhirter to Everyone:

My apologies!

08:42:55 From Jon McWhirter to Everyone:

Would a special session on "Thermal Striping" be worthwhile?

08:55:32 From Jon McWhirter to Everyone:

or Fluid-Structure Interaction? Are those subsets of CFD and Experiment? Or worthy of their own sessions?

09:04:02 From Juliana Pacheco Duarte to Everyone:

There is an ongoing effort from OECD NEA to develop ways to provide guidelines for ML/AI

09:18:57 From Jon McWhirter to Everyone:

What's the protocol for Invited Speakers/Papers? In THERMAL STRIPING, there are contributions from Applied Math and Solid Mechanics that might be worthwhile to consider.

09:23:57 From Annalisa Manera to Everyone:

My apologies for not joining from the beginning

09:24:03 From Jon McWhirter to Everyone:

BRB

09:26:40 From Dillon Shaver (ANL) to Everyone:

Jon - we typically only do invitations for panel speakers. Specific invitations for the general sessions are handled in an informal manner through the general paper submission system

09:26:42 From Yong Hoon Jeong to Everyone:

This is for updating you on NURETH-21-2025. Korea.

09:27:07 From Jon McWhirter to Everyone:

Back

09:43:07 From Jon McWhirter to Everyone:

Replying to "Jon - we typically o..."

OK Thank you.

09:46:59 From Xiaodong Sun to Everyone:

Great job, Steve! Thank you!

09:47:26 From SHIS3 to Everyone:

Thank you Steve!

09:47:40 From Hitesh Bindra to Everyone:

Thank you Steve Bajorek

09:52:17 From Xiaodong Sun to Everyone:

All, I am sorry that I will have to sign off due to another commitment. Hope to see you all at the annual meeting in Indianapolis. Thanks, Xiaodong

09:59:24 From Trevor Kent Howard to Everyone:

Town hall: <https://www.ans.org/meetings/am2023/calendar/event-854/>

10:03:22 From Bob Martin (BWXT) to Everyone:

Great meeting all, Thanks for leading us Dillon.

10:03:38 From SHIS3 to Everyone:

Thank you Dillon!

10:03:50 From Subash Sharma to Everyone:

Thanks Everyone !! have a good day !!

10:03:54 From Juliana Pacheco Duarte to Everyone:

Thank you

10:03:56 From Sunming Qin (INL) to Everyone:

Thank you!