

REPORT

COMMITTEE OF VISITORS 2019

DOE OFFICE OF NUCLEAR PHYSICS

Filomena Nunes

Michigan State University

NSAC Charge

The panel should assess the operations of the Office's programs during the fiscal years 2016, 2017, and 2018. (...) The panel should consider and provide evaluation of the following major elements:

- (a) the efficacy and quality of the processes used to solicit, review, recommend, monitor, and document application, proposal, and award actions; and
- (b) the quality of the resulting portfolio, including its breadth and depth, and its national and international standing.

Committee

Joseph Arango, DOE TJNAF Site Office

Eva Birnbaum, Isotope Production and Distribution
Program LANL

Vincenzo Cirigliano, LANL Theoretical Division

David Dean, ORNL Physical Sciences Division

Gail Dodge, Old Dominion University

Olga Evdokimov, University of Illinois Chicago

Renee Fatami, University of Kentucky

Donald Geesaman, ANL Physics Division

Kevin Hart, ORNL DOE Isotope program

Diane Hatton, BNL NPP Office of project planning and
oversight accelerator projects

Karsten Heeger, Yale University

David Hertzog (NSAC chair), University of Washington

Calvin Howell, Duke University (TUNL)

Cynthia Keppel, TJNAF

Johnny Moore, ORNL Site Office

Filomena Nunes (COV chair), Michigan State University

Erich Ormand, LLNL Physical and Life Sciences Directorate

Rosi Reed, Lehigh University

Thomas Schaefer, North Carolina State University

Rebecca Surman, University of Notre Dame

Brent Vandervender, PNNL

Steven Vigdor, Indiana University

Sherry Yennello, Texas A&M University

COV materials

Prior to COV meeting:

- wide range of materials encapsulated in the **COV book** (in PAMS)
- included were the 2016 COV report and NP response; documentation on NP budgeting, project oversight and review mechanisms

At the COV meeting:

- Access to selected proposals and annual reports (representative of the multitude of activities carried out by NP) in PAMS
- progress reports and quadrennial reviews from laboratories (these were not in PAMS)
- slides for all presentations as well as summary slides for each program manager (in PAMS)

Concerning the DOE Isotope Program:

- access to the list of available isotopes for sale and active initiatives, policies for entering/exiting markets, mitigating foreign supply, and the overall strategic plan

In providing access for individual COV members to this array of materials, the NP conflict of interest policy was ensured by NP staff.

Agenda

Monday 9 December 2019

8:00am Executive Session

8:50am Welcome

Tim Hallman

9:00am Office of Nuclear Physics Overview

Tim Hallman

9:45am Physics Research Division Overview

Tim Hallman

10:30am Break

10:45am Facilities & Project Management Division Overview

Jehanne Gillo

11:30am Isotope Program Overview

Jehanne Gillo

12:15pm Working lunch

1:30pm Q&A

2:30pm Budget Process

Brian Knesel

3:00pm Status of PAMS

Mariam Elsayed

3:30pm Response to COV 2016 recommendations

Tim Hallman

4:00pm Break

4:15pm Discussion with Hallman and Gillo

4:45pm Committee Breakout (discussion with program managers)

6:00pm Executive session (homework)

Agenda

Tuesday 10 December 2019

- 8:00am Report on homework Tim Hallman
- 9:00am Executive Session
- 10:30am Break
- 10:45am Committee Breakout (discussion with program managers)
- 12:00pm Working lunch
- 1:15am Committee Breakout (discussion with program managers)
- 2:30pm Break
- 2:40pm Executive session
- 4:30pm Committee work

Wednesday 11 December 2019

- 8:30am Executive Session
- 12:00am Working lunch
- 1:00am Executive session
- 2:00pm Meet with Hallman and Gillo
- 2:30pm Closeout

COV working groups

Projects: David Dean, Diane Hatton, Cynthia Keppel

Facilities: Joseph Arango; Steven Vigdor, Sherry Yennello

DOE Isotope Program: Eva Birnbaum, Kevin Hart, Jonny Moore

Research Heavy Ion Exp: Olga Evdokimov, Renee Fatemi, Rosi Reed

Research Medium Energy Exp: Gail Dodge, David Hertzog

Research LBNL and FS&Neutrinos Exp: Karsten Hegger, Calvin Howell

Research Theory, SciDAC, Quantum Computing, Nuclear data:

Vincenzo Cirigliano, Filomena Nunes, Thomas Schaefer, Rebecca Surman

Research Labs: Don Geeseman, Erich Ormand, Brent VanDevender

Research ECA: Thomas Schaefer, Calvin Howell, Rebecca Surman

COV 2016 – responses: Gail Dodge, David Hertzog

NP Portfolio world-leading in many areas

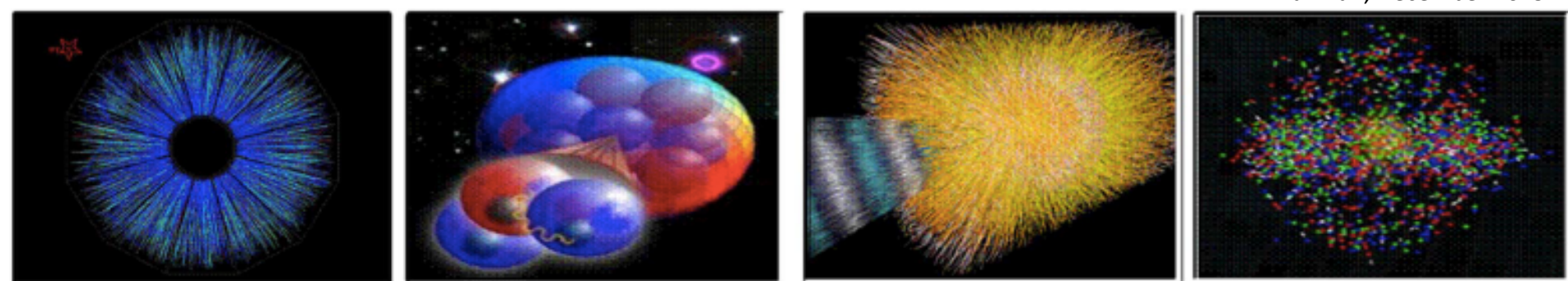
NP science program supports a broad range of research programs:

- hot and cold QCD
- nuclear structure and nuclear astrophysics
- fundamental symmetries and neutrino physics (FS)
- isotopes production and research.

NP's program is of vital importance domestically:

- contributes to a highly trained technical workforce
- carefully stewards a unique suite of major accelerator facilities – CEBAF, RHIC, ATLAS, and soon FRIB
- maintains a highly visible isotope program that supplies critical stable and radioactive isotopes for medical, industrial, and research needs

Hallman, December 2019



COV was impressed with NP progress

- continuing growth and capability of the DOE isotope program
- exciting nuclear science being produced at the major facilities, concurrent with two major construction projects, one already completed (12 GeV upgrade) and another 92% complete (FRIB).
- recent creation of the fundamental symmetries program and the recent hires of the program managers of NSNA and FS.
- the superb performance of the SBIR program;
- the reestablishment of domestic stable isotope enrichment and availability of the alpha-emitting isotope ^{227}Ac ;
- the additional topical collaborations in nuclear theory and expansion of the FRIB theory alliance.

Gillo, December 2019



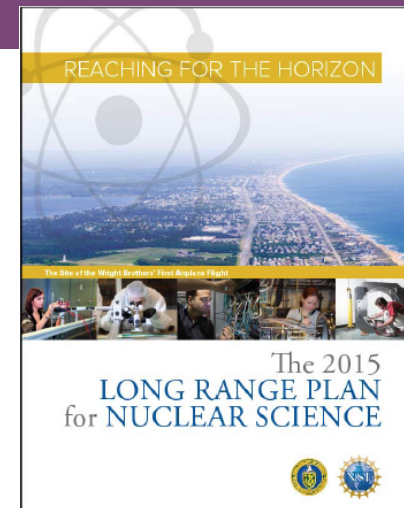
Comments on process

- proposal and oversight procedures are efficient and effective
- processes are well documented
- funding decisions are consistent with reviews
- PAMS has become a useful tool

We found that the program has implemented fair review and selection processes.

The committee commends the efforts of NP in the formulation and execution of budgets, given the unique challenges faced during the time period reviewed.

Implementation of the 2015 Long Range Plan








It is our assessment that NP has been executing the priorities of the NSAC LRP through its funding decisions and overall program stewardship.

- Facilities are operating well and producing excellent research (LRP Recommendation 1)
- There have been careful planning and initial steps toward executing LRP recommendation 2 (neutrino-less double beta decay) and LRP recommendation 3 (electron ion collider).
- Significant investment is being directed into major items of equipment (LRP recommendation 4).

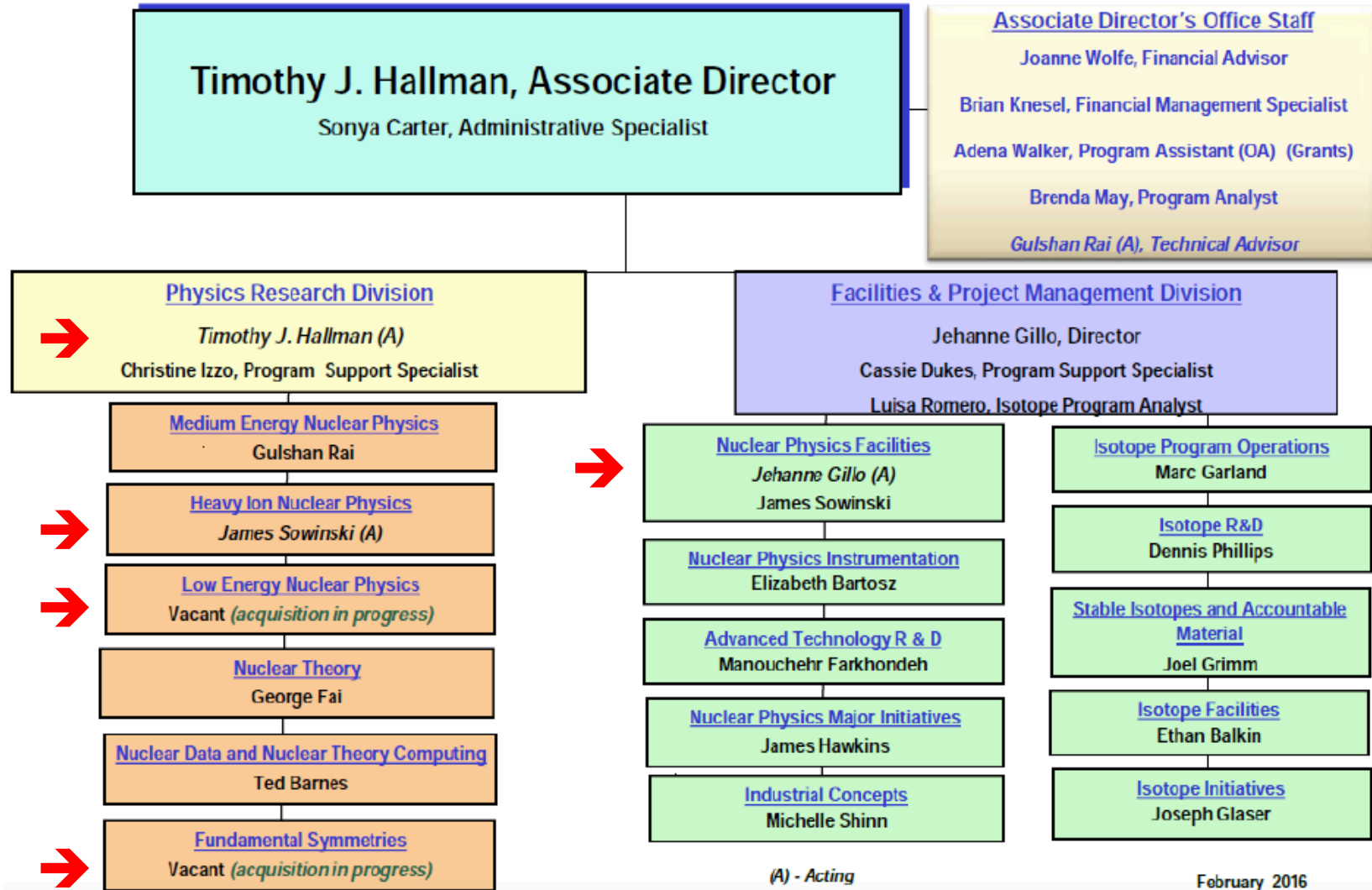
Response to COV 2016

Our Recommendations

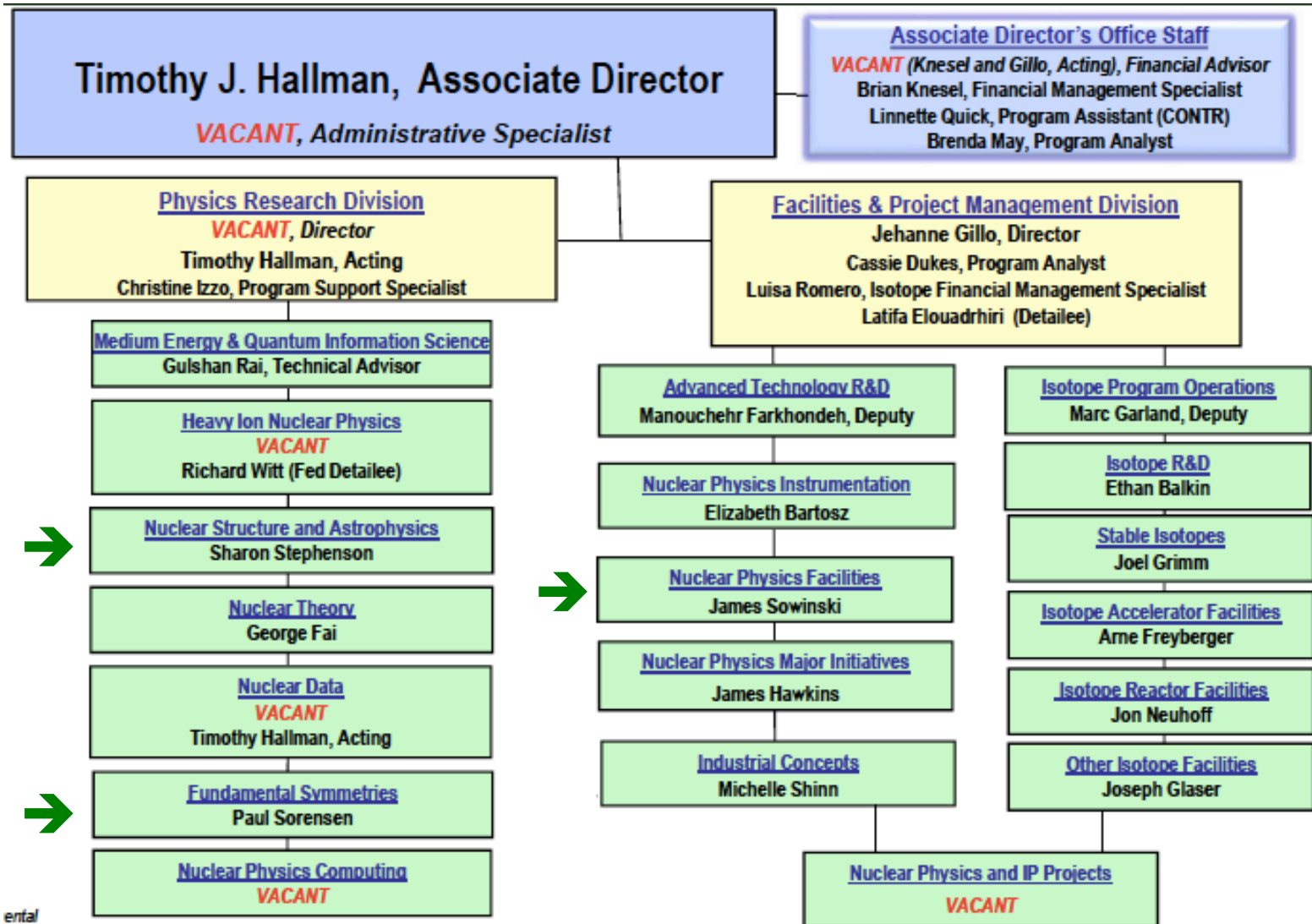
Gail Dodge, NSAC 2016

-  1. Our highest priority recommendation is that NP fill the Physics Research Division Director position. NP should consider creating a search committee or task force in the community to identify and recruit candidates for the research director position. The search committee might also be helpful in identifying obstacles to filling the position. NP should report on progress at the next NSAC meeting after receiving the report.
-  2. Filling the program manager positions in the Physics Research Division is of critical importance. NP should develop and implement a recruitment strategy to fill these positions as soon as possible.
-  3. A mechanism should be developed to provide support to the proposal review process so that new program managers can effectively and efficiently execute funding decisions. Explore options such as convening an expert panel or engaging a short-term detailee or a consultant.
-  4. The Office of Science should redouble efforts to get a fully functional PAMS system in place and populated.
-  5. Create a plan for the Office of Nuclear Physics to promote diversity and inclusion throughout its portfolio of programs.

Staffing (COV 2016)



Staffing (COV 2019)



Several vacant positions in NP due to retirements and growth of programs

Physics Research Division

Director (Hallman acting, SES position)

Technical advisor (Rai acting)

Heavy-ion Nuclear Physics (detailee)

Nuclear data (Hallman acting)

Nuclear physics computing

Facilities and project management

NP and IP projects

Support staff:

Academic specialist (Dukes acting)

Financial advisor (Knesel and Gillo acting)

Physics Research Division Director

#1 priority of COV2016 was to fill the research division director position. **This has become even more urgent!**

The leadership of the research division director is critical

- There are imminent critical decisions to occur roughly within a year:
 - development of the next long range plan activity,
 - the launching of a major new construction project,
 - the next comparative review
- There are important changes in the scientific landscape
- The office needs to respond to new Presidential priorities

The research division director is also needed for the daily activities: recruitment, mentoring and workforce development, establishing consistent practices in the Research Division, and providing oversight in managing the changing science portfolios. **The heroic effort of the current leadership, while commendable, is clearly unsustainable.**

Research Division Director

Recommendation 1. It is urgent that the Research Division director position be filled within a year. The Research Division director is imperative for the health of the NP office and the community it serves. The division directors, in conjunction with the AD, are essential to lead new initiatives aligned with national priorities.

Succession plan

While NP has successfully recruited new program managers since the last COV, new programs have been created, some program managers have recently retired, and others are close to retirement.

Several support staff positions are also vacant.

Most importantly, the COV noted that the operations at NP hinge heavily on a few key individuals.

Recommendation 2. The COV recommends that the NP leadership develop a succession plan for the entire office. This plan needs to mitigate the risk involved in the potential loss of critical staff in the office.

Additional support for theory

The theory program manager is handling a very large theory portfolio: all national laboratories; university PIs, topical collaborations, the INT, SciDAC and the Facility for Rare Isotope Beam Theory Alliance (FRIB-TA).

The last COV pointed out that the program manager for theory was overburdened. Since then, the program manager for nuclear data and computing has retired and the theory program has grown, further increasing the workload.

Recommendation 3. In addition to filling the current vacancies, the office should bring on board an additional scientist to support the nuclear theory program.

Notable progress on Diversity Equity and Inclusion

The committee was extremely impressed with the progress NP made on diversity, equality and inclusion since the last COV:

- Broadly disseminated Code of conduct for all awardees
- Discussion of diversity and inclusion issues at the start of panel sessions,
- Establishing significant representation in panels
- Reviewing the annual SC Laboratory Diversity and Inclusion Plans.
- Initial steps to data collection in PAMS

Recommendation 4. The office should continue their efforts to increase diversity and inclusion in the community of PIs and those supported by their grants. Such a process should be informed by data to the extent possible.

Importance of NSAC

For over 40 years, the LRPs developed by NSAC have driven the scientific pursuits of the field. NSAC is chartered under the Federal Advisory Committee Act and it is important that it continue to play its significant advisory role.

Recommendation 5. The COV recommends that the Office of Science maintain the strong relationship between the Office of Nuclear Physics and the U.S. research community through the Nuclear Science Advisory Committee.



Closing remarks

Special thanks:

NP staff were always helpful, providing all the materials in a timely manner.

NP leadership was forthcoming and frank in their responses to our questions.

The committee was fantastic, always engaged and very responsive to my requests.

We recommend that NP report back to NSAC within a year.