

**Report from the Committee of Visitors
of the DOE Office of Nuclear Physics
March 1 – 3, 2016**

Gail Dodge
Old Dominion University

NSAC – June 27, 2016

The Charge to NSAC (Review Period FY 2013 – 2015)

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.

Comment on progress made toward addressing action items from the previous COV review.

Report should be submitted by the end of March 2016 ...

The Committee

David Arakawa
Jeffrey Blackmon
Art Champagne
Frank Crescenzo
Gail Dodge – Chair
Alejandro Garcia
Don Geesaman
John Harris
Ulrich Heinz
Dave Hertzog

Barbara Jacak
Bill Louis
Allison Lung
Saskia Mioduszewski
Meiring Nortier
Filomena Nunes
Erich Ormand
Richard Pardo
Philip Pile
Sally Schwarz
Matt Shepherd

The Process

- ▶ We had access to substantial information as part of an online briefing book. Most of the information was available two weeks before the originally scheduled meeting date (Jan 26 – 28)
- ▶ We iterated with NP on the agenda and the items to be included in the briefing book
- ▶ We were invited to request additional information as needed before the COV meeting
- ▶ The committee was broken into subcommittees:
 - Grants 1 (heavy ion, medium energy)
 - Grants 2 (low energy, fundamental symmetries and neutrinos, theory, SciDAC, nuclear data)
 - Lab Research
 - Facility Ops (including accelerator grants)
 - Projects
 - Isotopes
- ▶ We selected grants to review in advance from a list that had identifying information removed. This allowed the files for an initial set of grants to be pulled out in advance.
- ▶ Three intensive days at DOE (talks, breakout sessions, homework questions, meetings with management, program managers, etc). We were careful not to look at grants or proposals with which we have a conflict of interest.
- ▶ Everyone at NP was very helpful and forthcoming. Requests for additional information were fulfilled quickly and thoroughly.

COV 2016 Subcommittees Assignments:

Grants 1 (heavy ion, medium energy)

Matt Shepherd (lead)

Gail Dodge

John Harris

Saskia Mioduszewski

Grants 2 (low energy, fundamental symmetries and neutrinos, theory, SciDAC, nuclear data)

Eric Ormand (lead)

Filomena Nunes

Art Champagne

Jeff Blackmon

Alejandro Garcia

David Hertzog

Lab Research

Bill Louis (lead)

Don Geesaman

Ulrich Heinz

Facility Ops

Richard Pardo (lead)

Phil Pile

Frank Crescenzo

Projects

Barbara Jacak (lead)

Allison Lung

David Arakawa

Isotopes

Meiring Nortier (lead)

Sally Schwarz

Notes:

1. Theory is included in Grants 2 because the theorists are in those areas.
2. Accelerator grants are part of Facility Ops
3. Lab Research also includes quadrennial reviews.

The Agenda Day 1

Tuesday, March 1

8:00 am	Meet in DOE Lobby	
8:15 am	Executive Session (E-301) COV charge, etc..., procedures	
8:50 am	Welcome	Tim Hallman
9:00 am	Office of Nuclear Physics Overview (30+15)	Tim Hallman
9:45 am	Physics Research Division Overview (30+15)	Tim Hallman
10:30 am	Break	
10:45 am	Facilities & Project Management Division Overview (30+15)	Jehanne Gillo
11:30 pm	Isotope Program Overview (30+15 min)	Jehanne Gillo
12:15 pm	Working Lunch (E-301)	
1:30 pm	Q&A with Office on morning discussions	
2:30 pm	Budget Process (20+10)	Joanne Wolfe
3:00 pm	Status of PAMS (15+10)	Linda Blevins
3:25 pm	Break then Closed Session	
4:15 pm	Discussion with Hallman and Division Director	
4:45 pm	Committee Breakouts (Program Managers available for discussion with breakout groups as requested)	
	<u>Grants 1</u> (G-403)	<u>Grants 2</u> (G-412)
	<u>Lab Res.</u> (F-441)	<u>Facility Ops</u> (E-301)
	<u>Projects</u> (E-301)	<u>Isotopes</u> (J-108)
6:00 pm	Executive Session (E-301) – Committee generates list of additional information desired for presentation on Tuesday or Wednesday.	
7:00 pm	Adjourn	

Wednesday, March 2

The Agenda Day 2

- 7:45 am Meet in DOE Lobby
- 8:00 am Report on Homework (E-301)
- 9:00 am Executive Session
- 10:30 am Breaks (E-301) & (NP Hallway – near G-417)
- 10:45 am Committee Breakouts (Program Managers available for discussion with breakout groups as requested)
- | <u>Grants 1</u> | <u>Grants 2</u> | <u>Lab Res.</u> | <u>Facility Ops</u> | <u>Projects</u> | <u>Isotopes</u> |
|-----------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| (G-403) | (G-412) | (F-441) | (E-301) | (E-301) | (G-207) |
- 12:00 pm Working Lunch (G-207)
- 1:15 pm Continue Committee Breakouts (Program Managers available for discussion with breakout groups as requested)
- | <u>Grants 1</u> | <u>Grants 2</u> | <u>Lab Res.</u> | <u>Facility Ops</u> | <u>Projects</u> | <u>Isotopes</u> |
|-----------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| (G-403) | (G-412) | (F-441) | (H-209) | (J-108) | (G-207) |
- 2:30 pm Break (NP Hallway – near G-417)
- 2:40 pm Executive Session (G-207) Discuss initial findings
- 4:30 pm Committee work or Meet with program managers, assign homework
- 6:30 pm Adjourn

The Nuclear Science Portfolio

- ▶ The DOE NP portfolio is world-leading in many areas, such as hot and cold QCD. Construction of FRIB will restore the U.S. leadership in low-energy nuclear physics and nuclear astrophysics.
- ▶ Fundamental symmetries is growing and now has its own portfolio separate from low energy. DOE is working jointly with NSF on a joint management plan for R&D for a ton-scale neutrinoless double beta decay experiment.
- ▶ The theory portfolio is excellent and well aligned with experimental efforts at U.S. facilities. Topical collaborations have been very valuable. SciDAC initiative has been critical.
- ▶ RHIC and ATLAS are operating at very high levels of performance; Jefferson Lab has been under construction and will begin full operation soon.

Overall: “The goals of the 2007 NSAC Long Range Plan have been substantially achieved, despite highly constrained budgets. NP has been an effective steward of nuclear physics resources in support of the priorities of the community.”

The Isotope Program

- ▶ The Isotope program is very broad and the scope is expanding. The program is well organized and well managed.
- ▶ The program is guided by the 2015 Long Range Plan for the DOE-NP Isotope Program
- ▶ “The committee is impressed with the progress over the review period towards further enhancing the availability of priority isotopes.”
- ▶ The program has included a focus on workforce development, supporting nuclear and radiochemistry Ph.D. students, postdoctoral fellows, and undergraduates students.

Comparative Research Review (CRR)

- ▶ In 2013 NP conducted a comparison of university and lab research groups within each subfield.
- ▶ Support was terminated for 20-25% of grants, which corresponded to 5.5% of the research funding.
- ▶ Groups that were terminated were able to reapply the following year as part of the competitive review that considered all new proposals.
- ▶ The CRR process was well managed and helped to optimize the research portfolio. Money that was freed up did enable new initiatives to be supported. However, the requirement to fully fund awards less than \$1M absorbed about 1/3 of the available funding.
- ▶ Overall it was a valuable exercise, but the effort and expense should preclude this from occurring frequently.
- ▶ The COV viewed positively the idea of continuing to review new proposals together as a cohort, as was done with the competitive review.

Office of Nuclear Physics

Timothy J. Hallman, Associate Director

Sonya Carter, Administrative Specialist

Associate Director's Office Staff

Joanne Wolfe, Financial Advisor

Brian Knesel, Financial Management Specialist

Adena Walker, Program Assistant (OA) (Grants)

Brenda May, Program Analyst

Gulshan Rai (A), Technical Advisor

Physics Research Division

Timothy J. Hallman (A)

Christine Izzo, Program Support Specialist

Medium Energy Nuclear Physics

Gulshan Rai

Heavy Ion Nuclear Physics

James Sowinski (A)

Low Energy Nuclear Physics

Vacant (acquisition in progress)

Nuclear Theory

George Fai

Nuclear Data and Nuclear Theory Computing

Ted Barnes

Fundamental Symmetries

Vacant (acquisition in progress)

Facilities & Project Management Division

Jehanne Gillo, Director

Cassie Dukes, Program Support Specialist

Luisa Romero, Isotope Program Analyst

Nuclear Physics Facilities

Jehanne Gillo (A)

James Sowinski

Nuclear Physics Instrumentation

Elizabeth Bartosz

Advanced Technology R & D

Manouchehr Farkhondeh

Nuclear Physics Major Initiatives

James Hawkins

Industrial Concepts

Michelle Shinn

Isotope Program Operations

Marc Garland

Isotope R&D

Dennis Phillips

Stable Isotopes and Accountable Material

Joel Grimm

Isotope Facilities

Ethan Balkin

Isotope Initiatives

Joseph Glaser

(A) - Acting

February 2016

Staffing in the NP Office I

- ▶ The vacancy in the Research Director Position is now in its 5th year. The associate director is filling this role in an acting capacity.
- ▶ Two searches have been conducted – not successful
- ▶ “The vacancy in the research director position constitutes a significant risk to the quality of the research review process and the effectiveness of NP as a whole.”

Recommendation #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.

Staffing in the NP Office II

- ▶ Three permanent program manager (PM) positions are unfilled (fundamental symmetries, low energy, heavy ion)
- ▶ Searches have been conducted for two of the three positions – so far unsuccessful
- ▶ Some program managers have to manage more than one program; some PMs are managing programs outside their area of expertise.
- ▶ “The COV has serious concerns that the three program manager vacancies in the Physics Research Division are detrimental to the long-term health and functioning of the research division. This situation has become critical in light of the departure of the low-energy program manager and the planned return of Jim Sowinski to the facilities division in summer 2016.”

Recommendation #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.

Staffing in the NP Office III

- ▶ The hard work and dedication of the NP staff is impressive. Most people in the office have had extra responsibilities because of the vacancies.
- ▶ Most program managers have very heavy workloads. PM in theory has ~80 university grants plus lab research.
- ▶ “...we have not identified situations in which the quality of the review process has been compromised nor have we found evidence of poor outcomes.”
- ▶ Ideally the PM would have expertise in the portfolio he/she is managing, but this is not always possible. We have seen examples of PMs doing an excellent job in an area outside their primary expertise. Either way it takes time to come up to speed.
- ▶ NP should consider pursuing more IPAs and detailees or other short-term assignments for members of the community to assist with the work.

Recommendation #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.

Portfolio Analysis and Management System (PAMS) I

- ▶ PAMS is online and gradually adding functionality. It is now used to submit and review proposals, process funding decisions, maintain information on reviewers, submit annual reports, etc.
- ▶ Early indications are that PAMS is saving time for PMs, especially during the processing of awards for funding.
- ▶ Each person named in an annual report is encouraged to create/update a PAMS account. PAMS has recently added functionality for collecting optional personal profile information (race, ethnicity, gender, disability, and citizenship).
- ▶ The collection of these data is very important in order to enable NP and reviewers like the COV to search for biases in operations. At the time of the COV roughly 25% of people who had logged into PAMS had answered the gender question.
- ▶ “The COV encourages NP to monitor the response rate, particularly for junior researchers (graduate students and postdoctoral researchers) and take action as necessary to ensure the community populates the PAMS database.”

PAMS II

- ▶ The COV module is not yet ready in PAMS. This would eventually enable the COV to look directly at the electronic file, rather than the physical file (jacket), for a proposal or award.
- ▶ Because of the transition to PAMS, jackets still exist but do not have all the same information as in the electronic record. For some declinations, the documentation in the jacket was minimal. Additional information was available upon request.
- ▶ The past three COVs have recommended implementation of a database to keep track of grants and demographic information. The rollout has been slow.

Recommendation #4:

The Office of Science should redouble efforts to get a fully functional PAMS system in place and populated.

PAMS III

- ▶ With PAMS a declination can be processed by checking a box, without any explanation. A declination memo is no longer required. Additional information can be uploaded by the PM.
- ▶ “NP should consider developing guidelines for program managers about what documentation is appropriate to include in PAMS, both for awards and declinations. In particular, it would be helpful if there is some statement included for a declination that reflects the judgment of the program manager. The COV would like to have enough information in the electronic file to enable us to independently assess the process of making funding decisions (once the COV has access to PAMS).”

Diversity I

- ▶ The COV would like to be able to look for biases in funding decisions. Since the 2010 COV we have been recommending some form of tracking of demographic information, along with a database system for managing proposals and grants.
- ▶ NP has tracked (a) diversity information for Ph.D.s awarded through the Workforce Survey and (b) the gender of PIs for grants. Otherwise, the response to this request has involved waiting for PAMS to be operational. We still have no data.
- ▶ “It is very important that PMs be able to access diversity statistics in PAMS.”
- ▶ However, the **main goal** is to increase the participation of underrepresented groups in physics.
- ▶ We note that currently there is no mechanism within the NP processes to encourage or value work in support of diversity or outreach in individual proposals.
- ▶ Program managers are aware of diversity issues; NP management pays attention to these issues in hiring and populating review panels.
- ▶ “These efforts would benefit from continuing discussions within NP to evaluate diversity statistics and to increase awareness of implicit bias.”

Diversity II

- ▶ We want NP to take the next step in promoting diversity and inclusion.
- ▶ "NP is in a position to play a pivotal role in promoting diversity and outreach throughout its portfolio. To the extent possible within the Federal system, targeted enhancements to current NP activities should be considered and could have far-reaching effects in the field."

Recommendation #5:

Create a plan for the Office of Nuclear Physics to promote diversity and inclusion throughout its portfolio of programs.

Early Career Awards

- ▶ Flexibility - some proposals not funded as part of the ECA program were later funded as part of the regular program.
- ▶ Most of those finishing 2010 ECA grants were given regular funding.
- ▶ ECA proposals are processed differently in different years (not always an external panel).
- ▶ ECA awards can be made in isotopes and in accelerator science. These proposals are often more applied than the other nuclear physics proposals so NP is encouraged to monitor this program to ensure a level playing field.
- ▶ It is important to track the career paths of ECA recipients and those declined.

Response to 2013 COV Recommendations I

- ▶ Major #1: Develop and implement a database to track relevant proposal and grant information.
 - Underway in the form of PAMS.
- ▶ Major #2: Track the participation of under-represented groups.
 - Response tied to PAMS; NP did not seek authorization to expand Workforce Survey
- ▶ Major #3: Evaluate effectiveness of PAMS to address issues raised in report. Report yearly to NSAC
 - PAMS is not yet fully functional; updates to NSAC were not provided.
- ▶ Major #4: Focus on timely delivery of reports; develop written guidelines
 - Done. Guideline has been met with a few exceptions. Only one report was significantly delayed
- ▶ Major #5: Develop guidelines defining roles and responsibilities of program managers
 - Done.

Response to Previous COV Recommendations II

- ▶ Process #1: Enhance the peer review process to make it more discriminating
 - Response included CRR; the path forward is under development
- ▶ Process #2: Give greater control to programs over number and size of ECA awards. Give feedback to PIs of declined ECA proposals.
 - Done. PIs can read reviews and talk to PM if desired
- ▶ Process #3: Fill Research Division Director and medium energy PM positions.
 - PM position filled internally. Research Director position remains open
- ▶ Process #4: Define the details of the CRR and communicate them to the field
 - Done.
- ▶ Process #5: Analyze workforce data; mitigate the impact of constrained budgets on workforce.
 - NP has an ongoing effort to assess resource needs including analysis of workforce impacts and mitigation methods

Response to Previous COV Recommendations III

- ▶ Process #6: Establish performance metrics that measure scientific productivity at user facilities
 - Done.
- ▶ Process #7: Strengthen the coordination and information exchange of accelerator R&D activities between SC office
 - Done. JOG established with HEP and BES
- ▶ Future #1: Assess computational needs
 - Done.
- ▶ Future #2: Create a distinct fundamental symmetries portfolio
 - Done. Separated from low energy.
- ▶ COV #1: Prepare written response within 30 days and a report card at the time of charging the next COV
 - Done, although update was given to COV, not NSAC.

Our assessment: 6 of the 15 recommendations continue to require attention from NP and/or the Office of Science

Our Recommendations

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.