Accident Sequence Precursor (ASP) Program and Operating Experience (OpE) Program

Background:

In follow-on to the Project AIM common prioritization activities, the internal Risk-Informed Steering Committee (RISC) chartered a Review Team to assess the ASP Program and to recommend options on shedding, re-prioritizing, or performing work with fewer resources. The Review Team briefed the internal RISC on March 28, 2017[1], with the recommendation to eliminate the ASP Program and identify how other existing programs can meet the ASP Program intent.

During the March 28, 2017, RISC meeting, substantial discussions occurred with varying perspectives on the Program, its history, and its usage. At the conclusion of the meeting, the RISC Chairman assigned the Deputy Director, Office of Nuclear Reactor Regulation (NRR) and Acting Deputy Director, Office of Nuclear Reactor Research (RES) to evaluate the recommendations further and report back to the RISC on their recommendations and next steps.

Based upon the insights gathered and additional review of the draft report, the Deputy Office Directors concluded the ASP Program adds value by identifying the significance of complex events and conditions, assessing overall industry health, and measuring the effectiveness of Nuclear Regulatory Commission (NRC) regulatory processes. As a general matter, the ASP analyses also serve as a tool to communicate industry event information to the public and licensees. However, historically, ASP insights have not been used by other Agency processes to drive decision-making, programmatic changes, or additional communications to the industry.

The Deputy Office Directors recommended the following activities to enhance the ASP Program:

- Identify resource efficiencies through process or threshold changes;
- Identify how to use ASP results in other NRC processes; and
- Ensure the timeliness of ASP analyses to meet the needs of the associated customer processes.

The Deputy Office Directors concluded there was no need for another Working Group to accomplish these three follow-on actions. Instead, the Office Directors of NRR and RES agreed that the Branch Chief in RES responsible for the ASP Program and the Branch Chief in NRR responsible for the OpE Center of Expertise (OpE COE) develop recommendations on how to implement these three follow-on actions. More information on these follow-on activities is included in the Enclosure.

Areas of Specific Review/Outcomes:

The Deputy Office Directors identified a number of specific review areas for the RES and NRR Branch Chiefs to assess in order to evaluate the current framework and provide options on how to better integrate ASP results and insights into the appropriate Agency processes. Identified

[1] The Review Team presentation and associated report are available (nonpublic) in ADAMS at ML17160A092.

options should seek to improve the effective use of the insights gained from the ASP Program while also gaining efficiencies in the use of NRC staff necessary to generate the appropriate ASP analyses for use in Agency processes. The specific review areas are provided below:

1. **ASP Screening Criteria**: Review Licensee Event Report (LER) ASP screening criteria with the goal of reducing the number of LERs that initially screen into the ASP Program for additional staff review. In 2016, of the 63 LERs initially screened in as warranting a detailed ASP analysis, 52 were found not to be precursors without the need for a detailed analysis.
2. **Process Efficiencies:** Assess process points for efficiencies such as (1) use the Significance Determination Process (SDP) assessment to provide needed data for ASP in a more deliberate fashion; (2) the level of reviews required for independent ASP analyses; (3) minimization of process touch points; and (4) leveraging NRR/OpE and the SDP review processes to complement LER screening criteria.
3. **ASP Program Inputs to Other Programs**: Identify appropriate input points for ASP results into Reactor Oversight Process (ROP) and licensing self-assessment activities, Operating Experience, Generic Communications, and the Agency Action Review Meeting (AARM).
4. **Continued Focus on the Most Safety Significant Issues**: Recommended process changes should continue to result in the assessment of the most safety significant issues (e.g., those currently receiving the most in-depth analysis).
5. **Resource Impacts**: Estimate the resource savings associated with the options identified.
6. **Organizational Options for ASP Program Functions**: After addressing the requested program change options, identify the options for where the resources for the ASP Program could reside. Develop pros and cons for the options, given the current and future organizational interfaces.
7. **Timeline to Implement Recommendations**: Identify an appropriate timeline for implementation and conduct of a follow-up effectiveness review.

Collectively, evaluating each of these review areas is expected to provide the Deputy Office Directors sufficient information to address the three remaining follow-on actions noted above (i.e., identify process efficiencies, identify how to use ASP results in other processes, and ensure timeliness of ASP results). The results of the Branch Chief assessment for each of these areas is provided below.

Assessment of Areas of Specific Review/Outcomes:

1. ASP Screening Criteria

The ASP Program is described in RES Office Instruction (OI) TEC-005, “Accident Sequence Precursor (ASP) Program,” (ADAMS Accession No. ML16285A309[2]). Several Agency programs provide input to the ASP Program, including LERs, SDP evaluations, and Management Directive (MD) 8.3, “NRC Incident Investigation Program” inspection activities. The ASP Program focuses on events and conditions that could have a significant impact on core damage frequency. In general, issues associated with containment functionality and post-core damage accident progression are not currently assessed by the ASP Program. The ASP Program utilizes a progressive, multi-tiered screening process in order to quickly remove events

[2] Open ADAMS Document (Accident Sequence Precursor (ASP) Program)

and conditions that experience has shown have limited risk significance from the process stream. Specific screening process steps for LERs include the following:

1. Initial screening to identify candidate ASP events (currently performed by Idaho National Laboratory (INL) in conjunction with operating experience data collection and coding) - A review is conducted of all LERs to identify events and conditions which should be subjected to further analysis. A series of qualitative screening questions are used to perform the initial screening (e.g., to identify complex plant trips, safety system functional failures, etc.). Quality checks for this stage of the process include (1) oversight by the ASP Program Manager of the initial screening process and (2) a sampling review performed once a year on at least 10% of the LERs submitted in the prior year to verify they were appropriately dispositioned. Approximately 80% of the LERs received each year are screened out of the program at this stage (these screened out items are categorized as "LER Screen-out").

2. Determination if an SDP analysis has been (or will be) performed for the event described in the LER. If certain conditions are met (described in more detail in Section 2, below), the event is categorized based on the SDP result. This includes discussions with the Regional Senior Reactor Analysts (SRAs) and a review of the NRR "SDP Active and Historical Tracker" spreadsheet to assist in mapping SDP evaluations to the appropriate LER and/or identify potential ASP events not covered by an LER. LERs screened out during this process step are categorized as "SDP Screen-out". These items are categorized as precursor events if the final SDP result, as determined by the Regional SRA in accordance with the Inspection Manual, is greater than green.

3. For LERs that are not screened out based on the initial screening or are not adequately addressed by the SDP process (representing about 20% of the total number of LERs submitted in a year), an ASP analyst performs an additional screening level review. Per the current ASP Program guidance, screen-outs during this step should be limited to those events where there is a clear basis with supporting precedents that the condition will not result in a precursor; when performing a quantitative analysis is not practicable using the SPAR models; when an event is outside the scope of the ASP Program (e.g., security issues); or when the level-of-effort required to complete a quantitative analysis does not reflect the anticipated risk insights to be gained from the analysis. If appropriate, the ASP analyst may also perform a quantitative analysis to support a screen out decision. LERs that are screened out during this step are categorized as "Analyst Screen-out" items and represent approximately 15% of the total number of LERs received each year (i.e., approximately 95% of the LERs are screened out during initial LER screening and Analyst screening).

4. For the remaining LERs that are not screened out during the first three process steps, a more detailed review is conducted. This second level review includes a detailed review of the LER and other operating information (from previous LERs or from inspection reports), interactions with the regional SRAs (as appropriate) for insights on any SDP or MD 8.3 analyses or other information needed to model the event, and should include a quantitative screening using SPAR/SAPHIRE whenever possible. As a result, if the conditional core damage probability (CCDP) or the change in core damage frequency (ΔCDF) is greater than 1E-06[3], then the event is identified as a precursor. If the CCDP or ΔCDF is less than 1E-06,

[3] To reduce resources expended on the review of uncomplicated trips, the threshold for CCDP initiating event assessments is the greater of 1E-6 or the plant-specific loss of condenser heat sink/main feedwater initiating event.

the event is rejected from the Program. This process results in roughly 2-5% of the total number of LERs received annually to be identified independently as precursors by the ASP Program. LERs subject to a detailed review but are found to not meet the precursor threshold of 1E-6 are categorized as "Reject" items.

5. For precursors that exceed a CCDP or ΔCDF of 1E-04, an opportunity for additional review is provided to the licensee and NRR/Regional risk analysts. This review helps to ensure the quality of ASP analyses for the more risk significant events. Often, there are no events that reach this threshold in a given year.

Per the current ASP Program process, as described in RES OI TEC-005, peer reviews by qualified ASP analysts are conducted for process steps 3 and 4 (i.e., for "SDP Screen-outs", "Analysts Screen-outs", ""Rejects", and "Precursors"). For precursors with high safety significance, Process step 5 also includes review by NRR/Regional staff and the licensee. A strength of the ASP Program is the multi-level screening to focus resources on the most risk significance events and conditions. However, given that only 2-5% of LERs received each year result in an identified precursor, it is reasonable to question if the LER and/or Analyst screening thresholds are set too low and result in an excessive number of LERs being subject to resource-intensive reviews. A review of LERs that passed initial LER screening but were later Analyst Screen-outs or Rejects should be conducted to identify areas where the initial LER screening criteria can be enhanced. Furthermore, the Analyst screening criteria contained in RES OI TEC-005 is fairly high level – this guidance could be further enhanced to support more efficient screening decisions. Finally, the efficiency of the screening and peer review processes depend heavily on the knowledge and skills of the ASP analysts. The current philosophy for assigning analyst work had been to distribute ASP workload among a relatively large number of analysts (5-6). While this offered advantages from a training perspective and for workload management, it creates the potential for inefficiencies in the program resulting in variability in the work produced by analysts with differing levels of experience in performing ASP analyses. Some additional efficiencies may be obtainable by realigning ASP workload to a smaller cadre of highly knowledgeable analysts. Appropriate proficiency training and development of additional staff should also be done to maintain adequate staff capability to efficiently perform ASP analyses.

Recommendation:

1.a. Perform an evaluation of events and conditions that were initially screened into the ASP Program but were later screened out as "Analyst Screen-Outs" or "Rejects" in order to identify areas where initial LER screening guidance and analyst screening guidance can be enhanced.

1.b. Identify a smaller cadre of experienced risk and reliability engineers whose primary responsibility is the ASP Program, with limited collateral assignments, in order to improve analysis timeliness and efficiency of the peer review process.

1.c. Identify and implement appropriate proficiency training and activities to develop backup staff to ensure sufficient critical skills remain available to efficiently perform ASP analyses.

1.d. Update RES OI TEC-005 as appropriate based on Recommendations 1.a and 1.c.

Resources:

1.a. It is estimated that completion of the evaluation of screening criteria would require a one-time resource impact of approximately 0.1 FTE.

1.b. The resource impact of realigning ASP analyst workload to a smaller cadre of analysts to better build and leverage the knowledge, skill, and experience has a negligible short-term impact on resource. However, the longer-term efficiencies associated with assigning ASP workload to a smaller, more experienced cadre of analysts is expected to result in an efficiency gain of approximately 0.1 FTE per year.

1.c. Training to maintain analyst proficiency and ensure adequate staff backup capability to perform ASP analyses could be accomplished with less than 0.1 FTE per year by pairing experienced risk and reliability engineers with less experienced staff.

1.d. Enhancements to RES OI TEC-005 can be completed with a one-time resource impact of less than 0.1 FTE. This change will incorporate improvements to the ASP screening process and is expected to result in gaining approximately 0.1 FTE per year in efficiencies. Additionally, update to TEC-005 will implement participation in OpE Clearinghouse (discussed in item 2c) would result in additional analyst efficiencies due to better information access and sharing resulting in an additional reduction of approximately 0.1 FTE per year.

2. Process Efficiencies

SDP and ASP Program Interface

Review of the interface between the SDP and the ASP Program found that the ASP Program heavily leverages the SDP. As a result of the risk assessment standardization project in the 2000's, the ASP Program utilizes the results from SDP assessments when possible. However, there are certain constraints and limitations associated with SDP assessments for many events that make them unsuitable for direct application to the ASP Program. Therefore, when the ASP analysts do the SDP screening of an event, they search for complicating factors (e.g., multiple performance deficiencies or concurrent failed components)[4] or if the event was associated with the occurrence of an initiating event. If none of these conditions apply, the ASP Program accepts the quantitative risk analysis done for a performance deficiency under the SDP and does not conduct an independent risk analysis of these LERs. Adopting this approach in 2006 (see RIS 2006-24, "Revised Review and Transmittal Process for Accident Sequence Precursor Analyses,) substantially reduced duplication of quantitative analyses performed by the ASP Program risk analysts and the regional SRAs, saving about three FTE in the ASP Program level of effort. This reduction did not affect the NRC's ability to develop a clear understanding of all of the precursors to potentially more safety significant events, including identifying the most risk significant sequences and equipment that contributes to the risk from nuclear power plant operation.

There are a number of considerations that should be noted when leveraging SDP results for the purposes of the ASP Program. If an LER is screened to use SDP results, the timeliness for completing the ASP analysis depends on the timeliness of completion of the SDP assessment.

[4] The SDP focuses on assessing the risk of licensee performance deficiencies and generally considers each performance deficiency as an isolated condition. However, the ASP Program considers risk more holistically and may combine events and conditions not associated with a performance deficiency or multiple performance deficiencies.

Conversely, the enhanced ASP Program timeliness goals introduced to provide support for the annual AARM meeting have also resulted in increased analyst screening activities for events that may have been SDP screen outs in the past (i.e., to meet current timeliness goals, some events may need to be screened by the analyst if the SDP is not complete). Although the Inspection Manual establishes timeliness goals for the SDP, complex analyses can sometimes take additional time, which will delay finalizing the ASP analysis. For events where the SDP results cannot be used, but the SDP is still in progress, the ASP analyst will often defer interactions with the Regional SRA and/or the licensee to avoid interfering with the SDP evaluation. Although these consideration may delay the completion of an ASP analysis, the resource advantages associated with utilizing SDP results when possible and avoiding interference with the SDP evaluation outweigh the modest delays that may be encountered.

There were no new program efficiencies identified related to the interface between the SDP and the ASP Program that could be made that would maintain the capability of the NRC to develop a clear understanding of potential precursors and the risk insights on industry-wide performance and the effectiveness of NRC's regulatory programs.

Level of Independent Reviews of ASP Analyses

As discussed in OIG report OIG-06-A-24, "Evaluation of the NRC's Use of Probabilistic Risk Assessment in Regulating the Commercial Nuclear Power Industry,"[5] and associated recommendations, an important consideration for risk assessment activities is that the probabilistic risk assessment (PRA) models are sufficiently representative of the as-built, as-operated plant. In order to ensure that ASP analyses are conducted with sufficient quality and in a manner consistent with the Risk Assessment of Operational Events Handbook, Volume 3, "SPAR Model Reviews,"[6] RES OI TEC-005 requires that "SDP Screen-outs", "Analyst Screen-outs", "Rejects", and "Precursors" be subject to peer review. In addition, the Branch Chief for the ASP team reviews and approves the dispositions for each of these categories. Given the importance of the screening process in identifying potential precursor events, and the potential to inappropriately eliminate events from further consideration during the screening process, it is appropriate to continue the same level of peer review. However, the improvements to screening guidance and ASP analyst knowledge, skills, and experience discussed under recommendation 1.a, 1.b, and 1.c are expected to result in efficiency gains for both the screening and peer review processes.

Process Touch Points and Leveraging OpE and SDP for Screening LERs

As discussed on the interface between the SDP and the ASP Program, there were no additional changes identified that should be considered. As discussed above, the ASP Program currently considers the ROP review of LERs as it accepts the results of the SDP, in most cases, as the final ASP Program input. Therefore, the review of this topic focuses on minimizing process touch points involving LER reviews performed by NRR's OpE COE. In this area, there are process efficiencies possible that could also strengthen the NRC's OpE Program described in MD 8.7, "Reactor Operating Experience Program."

Currently, both the NRR OpE Clearinghouse and the RES ASP Program review every LER submitted by licensees (in addition to closeout inspection review by Regional staff). While these reviews may appear to be duplicative, they are performed for different purposes. However, a

[5] https://www.nrc.gov/docs/ML0627/ML062720275.pdf
[6] http://drupal.nrc.gov/sites/default/files/rasp-handbook-spar-rev-2-ML102850267.pdf

stronger connection between the ASP Program and the OpE Clearinghouse could result in enhancements to both programs. A strength of the OpE Clearinghouse, is that in addition to LERs, discussions include other event related information (event notifications, inspection information, etc.) needed to identify appropriate NRC follow-up. Leveraging the OpE Clearinghouse process by having ASP risk analyst participation would allow the ASP Program analysts to apply this information to the ASP screening and analysis process. In addition, the OpE Clearinghouse discussion may flag events that the ASP analyst may recognize as significant before the LER is issued. Further, insights from the ASP Program could be shared with inspectors using focused outreach efforts, such as providing risk insights from recent precursors identified through the ASP Program into OpE Comms. This would serve the dual purpose of reinforcing a focus on the most risk and regulatory significant events for both the OpE and ASP Programs. Better coordination with the OpE Clearinghouse would also enhance the efficiency of the ASP Program by integrating NRR staff's OpE knowledge with ASP Program analysts' risk knowledge when performing screening and analysis activities. For the OpE COE, having an ASP Program risk analyst participate in the OpE Clearinghouse could support routinely incorporating risk insights into the outcome of the deliberative process for identifying issues warranting regulatory follow-up. Other outreach efforts could include participation in periodic Regional SRA and inspector counterpart meetings. Consistent with the Commission's interest in the agency's use of risk information in decision-making as noted during the May 11, 2017, Commission meeting, these activities could help focus the assessment of potential generic issues to those issues with the highest risk significance.

Timeliness of ASP Analyses to Support other Agency Programs

RES OI TEC-005 specifies the objectives of the ASP Program that defines the primary purpose of the ASP Program in supporting NRC's safety mission. The ASP Program has as its primary objectives to provide: (1) a comprehensive, risk-informed view of nuclear power plant (NPP) long-term operational experience, a measure for trending NPP core damage risk, and a method to identify potential issues for consideration within the Generic Issues Program; (2) a partial check on dominant core damage scenarios predicted by PRAs; (3) feedback to regulatory activities as applicable; and (4) to monitor performance against performance indicators in the agency's Congressional Budget Justification (CBJ)[7] and in reports to Congress on events of high-safety-significance in accordance with "abnormal occurrence" (AO) criteria[8]. These objectives flow from the NRC's Strategic Plan and from MD 8.7, "Reactor Operating Experience Program." The ASP Program was able to meet these objectives with longer completion times without affecting the completion of the CBJ or AO reports. While these are the primary focus of the ASP Program, the ASP Program could support other Agency programs if the analyses were completed quicker.

The ROP has a short-turnaround need for assessing the risk from a performance deficiency or an event that is typically met by the SDP and the MD 8.3 risk analyses. However, for more complex or risk significant events, the ASP Program risk analysts and the regional SRAs have worked collaboratively to finalize a risk analysis that supports both the immediate needs of the ROP and the needs of the ASP Program. In these instances, the ROP needs drive the timeliness of the risk analysis. This is consistent with well-established precedent to be supportive of the program office needs, but to minimize the involvement of the ASP Program in

[7] NUREG-1100, Performance Budget/Congressional Budget Justification (https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1100/)
[8] NUREG-0090, Report to Congress on Abnormal Occurrences (https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0090/)

the ROP. Continuation of this practice will support both programs without additional costs, but does require a focused effort by the ASP Program risk analyst that is not typically needed to meet the objectives of other programs that use, or could use, the results of the ASP Program (see Recommendation 2.b.).

Recent changes to the ASP Program have shortened the timeframe for completing ASP analyses. These changes, which are reflected in RES OI TEC-005, were done in response to questions raised on the how the results of the ASP Program could be used to support other Agency programs. A driver for completion of ASP analyses is to support RES input into the AARM typically held in April each year (see Recommendation 2.b.). As documented in RES OI TEC-005, the ASP Program Manager is responsible for issuing an annual report summarizing the final disposition of all LERs reviewed (including LERs screened out by the contractor) in the prior CY. For example, events occurring from January 1, 2016, to December 31, 2016, are CY16 events. This report provides part of the RES input into the AARM. To meet this object, the average time of completion of ASP analyses is about 8 months from the date the LER is issued, with some being completed in as short as one month and with rare exception all being completed within 15 months.

Summary

Based on the above factors, maintaining existing practices for leveraging the SDP (see Recommendation 2.a) and maintaining current ASP timeliness goals to support the AARM (See Recommendation 2.b) are expected to maintain existing efficiencies and support to other regulatory processes. Participation of the ASP Program risk analysts in the OpE Clearinghouse (see Recommendation 2.c) provides immediate risk-insights to event analysis. Longer-term risk insights can be provided through enhanced communication using OpE Comms or other means of sharing ASP Program results with inspectors (see Recommendation 2.d.).

Recommendations:

2.a. Maintain the existing process for ASP Program consideration of SDP results.

2.b. Maintain ASP Program timeliness goals consistent with NRR process needs (e.g., ensure availability of timely ASP results to support Agency Action Review Meeting)

2.c. Ensure ASP Program analysts routinely participate in OpE Clearinghouse meetings and apply insights gained from these meetings to the ASP screening and analysis processes. This also supports leveraging the OpE COE interfaces with inspectors and regional staff to gather information through routine communication paths (i.e., OpE COE staff participating in daily special inspection team end of day discussions by phone).

2.d. Increase ASP Program outreach efforts by communicating risk insights to inspectors and other stakeholders through appropriate OpE Clearinghouse communication activities (e.g., OpE Comms) and other outreach activities (e.g., participation in Regional counterpart meetings, newsletter articles, webpage updates, etc.). To the extent practical, this would leverage insights already gained from the ASP Program to minimize resource impacts.

Resources:

2.a. There is no resource impacts from continuing the existing practice of leveraging SDP results in the ASP Program.

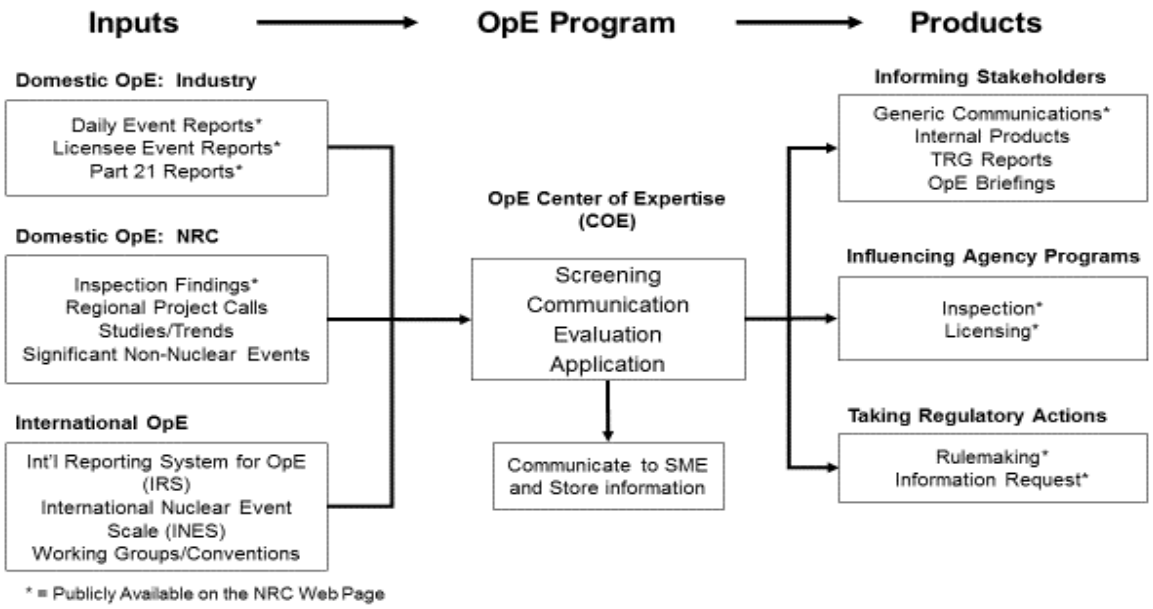
2.b. The ASP Program timeliness goals have been realigned to support the AARM and will continue to support complex or risk significant event analyses of the ROP. No additional resource impact is expected.

2.c. Ensuring routine participation of an ASP analyst at the OpE Clearinghouse meetings would be expected to require approximately 0.1 FTE. However, the increased efficiencies discussed in Recommendation 1.d would offset these costs in the long run.

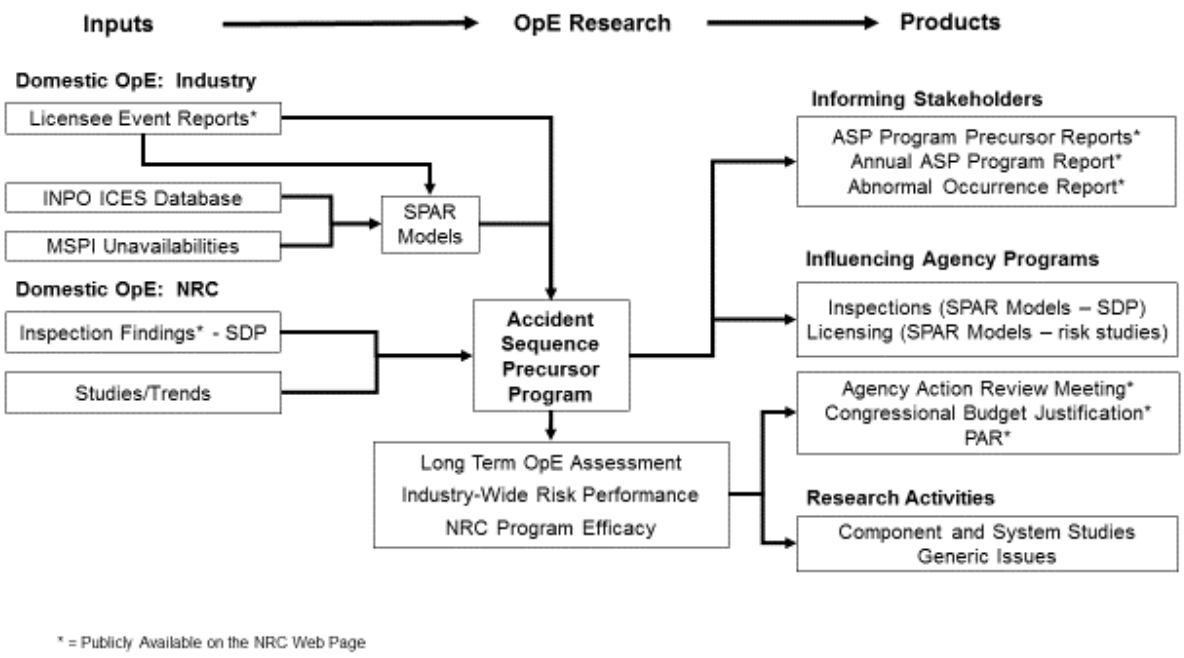
2.d. Developing and issuing risk insights for OpE Comms and other operational events based on precursor insights would likely increase the level of effort by about 0.1 FTE. This would primarily be driven by the additional time to prepare 1 or 2 OpE Comms by ASP Program risk analyst. However, this would result in better communication and utilization of ASP insights by the OpE and inspection communities.

3. ASP Program Inputs to Other NRC Programs

Below is a high-level overview of NRR's current OpE COE that shows the inputs and products derived from screening, communication, evaluation, and application of OpE data.



Below is a high-level overview of RES' OpE research efforts that shows the inputs and products derived from the ASP Program.



Both the OpE COE and the ASP Program would benefit from stronger and more direct interactions. Through enhanced interactions between the ASP Program risk analysts and the OpE COE staff, more effective and efficient sharing of risk insights and operational knowledge would occur between each group. This would allow the OpE COE inputs into other programs to consider more thoroughly risk insights, while allowing the ASP Program risk analysts to make better use of inspection and operational information discussed during OpE Clearinghouse meetings.

Another NRC program that benefits from input of the OpE COE, and to a limited extent from the ASP Program, is the ROP. The ASP Program precursor analyses provide staff with additional opportunities to exercise the SPAR models. This ASP Program feedback complements the feedback provided by Regional SRAs when they identify model changes that need to be incorporated into the base SPAR models used during SDP or MD 8.3 risk analyses.

There are enhancements to the interfaces between the ASP Program and the OpE COE that could make a more efficient, effective, and integrated process with the potential to improve the application of risk insights derived from the ASP Program into the use of OpE in other regulatory programs. By incorporating the risk insights from the ASP Program into the early evaluation and analysis of OpE, the focus of OpE communication with inspectors and feedback to the inspection process could target those areas with the greatest risk significance. Similarly, in the identification of generic issues, the concurrent efforts of both the OpE COE and RES ASP analysts to independently identify potential generic issues result in some duplication of effort. Incorporating the risk insights from the ASP Program into the evaluation of operating experience should result in an integrated, more risk-informed assessment of operating experience that could help focus the staff's attention on emerging generic issues more efficiently.

Recommendations:

Recommendations 2.c and 2.d would serve to increase the coordination between the ASP Program and OpE Clearinghouse. No additional recommendations were identified.

Resources:

No impact.

4. Continued Focus on the Most Safety Significant Issues

The proposed changes to include an ASP Program risk analyst in the periodic OpE Clearinghouse meetings will result in the integration of both operational insights and risk insights into the identification of events that warrant in-depth risk analyses to identify precursors consistent with the Commission's interest in the staff making progress on risk-informed decision-making. This change will allow ASP analysts to leverage the additional operational insights obtained from these meetings to enhance the ASP screening process. With the increased input of operational insights to the ASP Program screening process, it is likely that the screening criteria can be further improved over time to strengthen the focus on risk significant events and conditions. Consequentially, it is likely that fewer LERs would screen into the ASP Program for more detailed analysis.

Recommendations:

None. The recommendations under Review Area 1, 2, and 3 will help maintain the ASP Program focused on the most safety significant issues.

Resources

No impact.

5. Resource Impacts

The level of effort expended by the ASP Program to perform detailed analyses of the most safety and risk significant events (i.e., approximately 8-12 detailed evaluations per year) should not change. Resource savings should be realized through enhancement of the LER and analyst screening criteria and consolidation of ASP workload to a smaller, more experienced, cadre of ASP analysts. Increased participation in the OpE Clearinghouse and enhanced ASP Program outreach efforts will increase FTE needs, but this will be offset by efficiency gains within the ASP Program and significantly increased benefits from better communication and coordination between these programs. Resource impacts are summarized below (note that the contract costs associated with the ASP Program are negligible):

Recommendation	Activity	Short Term FTE Impact (FY2018 only)	Longer Term FTE impacts (FY2019 and beyond)
1.a	Evaluate ASP screening process	0.1 FTE	n/a
1.b	Redistribute ASP workload to smaller cadre of experienced analysts	~0 FTE	-0.1 FTE
1.c	Enhance ASP analyst training	~0 FTE	0.1 FTE
1.d	Update RES OI TEC-005	< 0.1 FTE	-0.2 FTE

2.a	Continue leveraging SDP results in ASP Program	n/a	0 FTE
2.b	Ensure ASP Program provides timely results	n/a	0 FTE
2.c	Participate in OpE Clearinghouse	0.1 FTE	0.1 FTE
2.d	Increase outreach efforts	n/a	0.1 FTE
	Net Resource Impact	< 0.3 FTE	0 FTE

Although the efficiency gains will not be fully realized for FY2018 (and are not shown in the above table), it is expected that increased OpE Clearinghouse participation will result in more efficient ASP screening and analyses. Taken in aggregate, the net result of these activities is additional ASP Program efficiency gains that will allow improved benefits and stakeholder engagement that enhances the agency's use of risk insights in decision-making, while maintaining resource needs stable.

6. Organizational Options for ASP Program Functions

The RES and NRR Branch Chiefs considered various options for resourcing the ASP Program, including maintaining the status quo with the program resources located in RES/DRA and moving the program resources to NRR. It was concluded that the organizational disruption and near term inefficiencies associated with moving program functions to NRR could not be justified in light of the loss of efficiencies associated with having ASP Program resources collocated with the SPAR, Systems Analysis Programs for Hands on Integrated Reliability Evaluations (SAPHIRE), and Operating Experience Data resources. Given the significant experience the Agency has in working in a matrixed structure, organization boundaries between Offices and Regions do not cause significant inefficiencies in communication and coordination. This is further evidenced by the emergence of a number of Centers of Expertise, including the OpE COE, which routinely cross organizational boundaries to perform mission related work. By implementing recommendations associated with increased interaction and coordination with the OpE COE and OpE Clearinghouse, the ASP Program staff can be more fully integrated into the broader Agency OpE community, further reducing the potential for organizational inefficiencies. In addition, the following factors were also considered:

- Consistent with Commission direction in SRM SECY 98-228, "Proposed Streamlining and Consolidation of AEOD Functions and Responsibilities," maintaining the ASP Program within RES ensures that the program remains independent of licensing functions.

- Reassignment of ASP Program staff to NRR would not result in significant efficiency gains for the program (i.e., would be cost neutral in the longer term), but would result in short term inefficiencies to execute the reassignment and disruptions to RES staff.

- Because detailed ASP analyses tend to be more complex than SDP (due to the presence of complicating factors such as multiple events), having ASP analysts collocated with SPAR model and SAPHIRE development staff provides some additional efficiencies for quickly resolving modeling or software issues.

- Loss of the ASP Program staff from RES would result in a substantial degradation of critical PRA assessment skills from the RES staff. This may impact the ability of RES to provide timely support to other Offices in the future.

By implementing the recommendations noted above, it is believed that significant improvements to the usefulness of ASP Program products, recognizing the Commissions interest in the staff's progress on risk-informed decision-making, can be made without relocating RES staff to NRR. Similarly, although there may be additional synergies generated by relocating the NRR/DIRS operating experience group to RES/DRA in order to better leverage the risk assessment and operating experience expertise residing in RES, the potential long term benefits of such a reorganization does not justify the costs and staff disruption, particularly in light of the strong open and collaborative working relationship established between NRR and RES.

7. Timeline to Implement Recommendations

Recommendation	**Activity**	**Timeframe for Implementation**
1.a	Evaluate ASP screening process	6 months from approval
1.b	Redistribute ASP workload to smaller cadre of experienced analysts	Immediately
1.c	Enhance ASP analyst training	Immediately
1.d	Update RES OI TEC-005	6 months from completion of recommendation 1.a
2.a	Continue leveraging SDP results in ASP Program	No change in current practices
2.b	Ensure ASP Program provides timely results	AARM timeliness already being implemented
2.c	Participate in OpE Clearinghouse	Within 2 weeks of approval
2.d	Increase outreach efforts	Within 2 weeks of approval