

# HL-LHC ATLAS - EVMS Surveillance Goals

- Review ATLAS's response to 2020 verification review recommendations and trace actual costs from a cost performance report (CPR) to the monthly accruals and the subaward invoice data in Columbia's financial system.
- Review effectiveness of the processes for assessing and forecasting COVID-19 impacts versus other cost and schedule variances.
- Review ATLAS project team's adherence to their EVMS processes and procedures in accordance with the ATLAS project controls documentation.
- Review the timeliness and reliability of project performance data provided by ATLAS.



# Scope – 13 of 32 EVMS Guidelines (EIA-748c)

1. Planning, Scheduling, and Budgeting – 1 guideline
2. Accounting Considerations – 2 guidelines
3. Analysis & Management Reports – 5 guidelines
4. Revisions & Data Maintenance – 5 guidelines

Assessment based on:

- Review of project documents,
- Discussions with Project Office staff, &
- CAM Interviews for select control accounts:
  - 6.04.01 Liquid Argon (LAr) Front End (FE) Electronics
  - 6.06.01 Muon Small diameter MDT chambers (sMDT)
  - 6.08.03 Trigger Global Event Processor (GEP)



# Summary

Guidelines assessed against EIA-748C standards and NSF practices:

**GREEN** (High compliance) - All aspects of the guideline are satisfactorily met

**YELLOW** (Medium compliance) - Some aspects of the guideline have non-critical issues

**RED** (Low compliance) - One or more critical aspects of the guideline failed to be met

- Critical aspects affect the EVMS effectiveness and reliability of the data

Preliminary assessment of the guidelines:

- 11 **Green**
- 2 **Yellow**
- 0 **Red**

No corrective actions required.



# Preliminary Observations & Recommendations

## Guideline #27: Revise Estimate at Completion – **Medium**

### Observations

- The Project has not performed an annual bottom up EAC according to the PEP/CEP.
  - The recent COVID BCP-1038 focused on the near-term activities in accordance with NSF guidance but it isn't comprehensive and wouldn't assess non-COVID aspects.
  - However, there is little value in performing a bottom up EAC now due to the full re-baseline in the future.
- The process for determining Risk Adjusted EAC (RAEAC) is not well documented.
  - The unique complexities for the ATLAS project (combination of multiple Level 2 analyses) warrant formal documentation of the analysis methodology.
  - It was not clear to the review team if the risk analysis was performed on the EAC or the BAC. Liens and differences between BAC/EAC should be included as part of the RAEAC value.
- The NSF June 2021 Monthly Report includes the confidence level in the TPC as a result of the risk analysis, but it did not include a summary of the analysis.



# Preliminary Observations & Recommendations

## Guideline #27 (continued): Revise Estimate at Completion – **Medium**

### Recommendations:

- Formally document the process for determining RAEAC as a supplement to the Risk Management Plan or in the NSF PEP.
- Document the RAEAC value in the NSF Monthly Report to comply with MFG guidance for reporting risk exposure.
- Include a summary of the risk analysis results include data tables and distribution curves in the NSF Monthly Report whenever the risk input to the RAEAC is updated.
- Follow-up with NSF LFO Liaison for expectations per the MFG.



# Preliminary Observations & Recommendations

## Guideline #23: Identify Significant Variances for Analysis – **Medium**

### Observations

- Monthly variance analysis reports (VARs) document total variances at the control account (CA) level and include generalized issue descriptions. However, in instances where multiple variance drivers exist, the VARs lack traceability to the relative contribution of each issue to the overall variance total.
- The project appears to have the data detail to be able to assign the cost and schedule impacts for the different drivers including COVID and non-COVID.
- The project is already planning to develop documentation (BOEs) detailing the basis of cost and schedule impacts for COVID-related variances starting Fall 2021.

### Recommendation:

- In VARs with multiple drivers, quantify the cost and schedule impacts with each identified driver, especially for VARs with both COVID and non-COVID related variances.



# Preliminary Observations & Recommendations

## Guideline #25: Summarize Information for Management (NSF Monthly Reports) – High

### Observations

- The NSF Monthly Reports include variance analysis (VARs) at the deliverable (WBS 3) level for negative cost and schedule variances larger than \$100k AND an SPI below 0.9.
  - Aligned with the Cooperative Agreement and the Current PEP
- The MFG indicates Monthly Reports should include VARs for all cost and schedule variances  $> \pm 10\%$  at the WBS Level agreed upon with NSF.

Recommendation: Include both positive and negative cost and schedule variance analysis reports in the NSF Monthly Reports.



# Preliminary Observations

## Guideline #16: Record Direct Costs – High

### Observations

- The review team was impressed with the Accrual Reconciliation Process and commends the ATLAS Team for the traceability and documentation.
- In verifying that Actual Cost of Work Performed (ACWP) in the CPR reconciles with Columbia's financials, we found some instances where the accruals were continuing to be used for the ACWP in lieu of the invoice amounts from the Columbia financial system (negligible, conservative deltas in ACWP).
- Columbia is considering a step to 'true-up' the accruals with the invoices with each Institution in conjunction with future incremental funding awards.

### Consideration (will not be documented as IOs):

- The review team endorses adding the 'true-up step' in the reconciliation process.





# Preliminary Observations

## Guideline #16 (continued): Record Direct Costs - High

### Observations

- As part of the monthly accrual collections, each Institution identifies the incurred COVID costs at WBS Level 4 by identifying the labor inefficiencies due to COVID for that month.
- 17 of the 36 WBS Level 4 are reporting incurred COVID impact costs in ACWP.
- In the CPR Report, only 5 of these WBS Level 4 are reporting a negative cost variance (cumulative).

### Consideration (will not be documented as IOs):

- Columbia should consider having each Institution perform a reasonableness check of the COVID costs in the ACWP as part of the 'true up' discussion or the COVID BOE's planned for the Fall.



# Preliminary Observations & Recommendations

## Guideline #10: Create Work Packages, Planning Packages

### Observations

- List of Planning Package activities (spreadsheet) was determined based on activity duration >60 days, not based on activity scope/complexity or level of planning.
- While Planning Package activities are not used extensively, they are also not identified in the RLS. No process for tracking to ensure conversion prior to the start of work.
- Some of the listed Planning Package activities are scheduled to start on July 1, 2021.

### Considerations (will not be documented as IOs):

- Determine Planning Package activities based on the need for earned value fidelity, in addition to activity duration.
- Consider coding activities in the RLS (EVT = “K”) to promote visibility and ensure earned value is not inadvertently accrued.

