



A monthly newsletter of the Energy Facility Contractors Group's Project Delivery Working Group

Issue 18

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Welcome to 2021!

This month's *Practitioner* brings a "PREPUBLICATION COPY – SUBJECT TO FURTHER EDITORIAL CORRECTION" of "A Consensus Study Report of The National Academies of Sciences • Engineering • Medicine".

"Consensus Study Reports" published by the National Academies of Sciences, Engineering, and Medicine document the evidence-based consensus on the study's statement of task by an authoring committee of experts. Reports typically include findings, conclusions, and recommendations based on information gathered by the committee and the committee's deliberations. Each report has been subjected to a rigorous and independent peer-review process and it represents the position of the National Academies on the statement of task.

The following excerpts represent a broad summary and "takeaways" from the report. The full report can be found on the Energy Facility Contractors Group (EFCOG) Project Delivery Working Group (PDWG) [webpage link](#) provided.

'REVIEW OF THE EFFECTIVENESS AND EFFICIENCY OF DEFENSE ENVIRONMENTAL CLEANUP ACTIVITIES OF THE DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT: FIRST REPORT'

This report "...stems from a request in the National Defense Authorization Act (NDAA) for 2019 to issue a report focused on the "effectiveness and efficiency" of the defense environmental cleanups in EM."

Source information came through "...public meetings and written queries, the committee gathered information to answer its Congressional charge from the NDAA. Many of the committee's queries led to informative responses, while others continue to be the subject of inquiry."

This first phase of the study will provide DOE with recommendations on the execution of projects and the application and adequacy of its controls, oversight and directives.

Congress asked the National Academies of Sciences, Engineering, and Medicine to consider the following:

Continued on next page

Effectiveness and Efficiency of EM Cleanup Activities

Continued from previous page

1. project management practices
2. project outcomes, and
3. the appropriateness of the level of engagement and oversight by the DOE-EM organization.

The committee entered into an agreement with EM that divided the work into two phases, with the first phase of study being focused on the execution of projects, the appropriateness and effectiveness of the controls and oversight applied to these projects, and the effectiveness with which these projects are realized through contracts.

- Phase 1 - will focus on the execution of projects, the appropriateness and effectiveness of the controls and oversight applied to these projects, and the effectiveness with which these projects are realized through contracts
- Phase 2 - will address how EM manages and measures progress on cleanups both at the site level and those of programs that cut across more than one site (e.g., for Portsmouth and Paducah). The committee will also look at how these pieces are rolled-up into an EM-wide portfolio. The second phase will also consider how the policies and directives described by EM headquarters during the work on this first report are realized in projects at the sites.

The committee met several times to hear testimony from the principals involved in the above described efforts, supplemented this information with written queries to EM, and deliberated on its own.

The committee made roughly 60 written queries of DOE to gather further information.

The committee read and considered prior and ongoing reviews of project management at DOE including those conducted by the department, the Government Accountability Office (GAO)—who also briefed the committee during the public meetings—and the National Academies.

The committee's findings and recommendations are included in the attached report, along with the context for each as given in the chapters. All the recommendations appear in this summary.

The committee observes that these recommendations will have more impact if implemented in a coordinated fashion rather than piecemeal.

The committee urges EM to strive for that coordination.

PROJECT MANAGEMENT:

The committee assessment of EM project management proceeded on two tracks: assessing the extent to which Order 413.3B represents best practice for project management and assessing how EM applied Order 413.3B to its portfolio of projects. The committee compared the requirements and procedures of Order 413.3B with other leading international protocols for project management, including the Project Management Institute Best Practices, the Construction Industry

The PRACTITIONER

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Continued on next page

Effectiveness and Efficiency of EM Cleanup Activities

Continued from previous page

Institute Best Practices and the U.K. Government Functional Standard GovS 002.

The committee found that DOE Order 413.3B generally compared favorably with these other benchmarks but did identify several areas where the Order could be further enhanced.

Footnote #3 - Paul Bosco, Office of Project Management, DOE, "Project Management (PM) Governance, Systems and Training," presentation to the Committee, May 6, 2020.

Footnote #4 - DOE (2018b) reiterates that "all projects equal to or less than \$50 million shall follow the Project Management Principles as established in Appendix C of DOE Order 413.3B."

See footnote references in [full report](#)

PROJECT MANAGEMENT RECOMMENDATIONS:

The committee recommends that DOE confirm, clarify, and expand DOE Order 413.3B to establish its applicability to all capital asset projects (not just construction and Major Instruments and Equipment and certain cleanup projects) and all EM projects, whether major systems projects or work carried out by a Management and Operating (M&O) contractor. The committee makes the following specific recommendations regarding the Order as well:

Pending the outcome of the NNSA pilot project, reduce the threshold value for applicability of Order 413.3B from \$50 million to \$20 million; 2. Continue applying the requirements of Order 413.3B to M&O contract work on capital asset projects—the latter including construction projects, major items of equipment and cleanup projects;

See [full report](#) for additional recommendations

PROJECT MANAGEMENT METRICS:

EVMS should provide a transparent and reliable process and approaches that explicitly, consistently, and clearly highlight the projects' temporal status

A key element of EVMS is a Schedule Performance Index (SPI), defined by the Project Management Body of Knowledge as a metric that is used to measure schedule efficiency. EM currently includes a measure of SPI in its EVMS system that is based on dollars expended, not time.

Because it is the key measure of schedule performance, it is important to calculate SPI based on time, not dollars, using the ratio of Scheduled Time of Work Performed (STWP) over Actual time of Work Performed (ATWP).

The difference between calculating SPI using dollars versus time can be dramatic.

SPI based on dollars will not flag a project as behind schedule at the completion as long as the project completes within Budgeted Cost of Work Scheduled.

A calculation based on cost does not always reliably convey possible schedule delays at the project completion and can lead to wrong conclusions about how successful it was. In contrast, SPI based on time will always reflect how delayed a project is regardless of the actual cost of the project.

PROJECT MANAGEMENT METRICS RECOMMENDATIONS:

DOE EM should implement a modification to its EVMS system that captures the project's temporal status more clearly and explicitly. Specifically, EM should immediately require that a

Continued on next page

Effectiveness and Efficiency of EM Cleanup Activities

Continued from previous page

revised Schedule Performance Index, $SPI(t)$, which is the ratio of Scheduled Time of Work Performed (STWP) and Actual Time of Work Performed (ATWP), be reported to accurately track schedule performance (Recommendation 5-2).

CONTRACT:

In short, the committee found that the ESCM is neither outcomes-based nor completion-focused. Rather, ESCM is focused on delivery of a set of discrete outputs that are not clearly mapped by contract to achievement of either a clearly defined intermediate or final end-state.

This significant deficiency deprives EM and the IDIQ contractor of the benefits of having a completion-oriented contract fully integrated throughout the supply chain and the fostering of innovation at the scale the program requires.

Finally, the ESCM approach, as defined, focuses on narrowly defined performance criteria and increases risks associated with incomplete statements of work.

CONTRACT RECOMMENDATIONS:

EM should establish well-defined, outcomes-based intermediate end-states in its ten-year clean-up contracts. Any intermediate outcomes should have clear, measurable metrics to assess site-based (versus task-based) achievement of the defined end-states.

EM should report progress on these metrics across the portfolio of end-state programs on a quarterly basis and such reports should represent a key EM performance measure.

EM should structure task orders on a scale that is appropriate for defining intermediate outcomes, award fewer individual tasks. EM should apply to such task orders the same management oversight as currently required for a Major Systems Projects (MSP) exceeding the \$750 million in total cost.

CONTRACT EXECUTION: FEES AND INCENTIVES:

The committee examined subjective and objective performance assessment summaries and resulting fees as presented in "Scorecards" posted on applicable DOE field office websites; in particular, for contracts awarded at the Hanford site.

After reviewing the evaluation of performance with Hanford cleanup contracts, DOE EM's rating of contractor performance does not appear to be consistent through years for a specific contract or across contracts in a specific year.

Performance ratings sometimes appear to not correspond to comments by the contract evaluator.

CONTRACT EXECUTION: FEES AND INCENTIVES RECOMMENDATIONS:

To increase transparency in contractor performance evaluation the committee recommends that DOE-EM should ensure that the contracts it issues for cleanup work (1) create a consolidated set of unambiguous "subjective" criteria for similar types of cleanup activities, and (2) use these criteria in the evaluation of all contract performance across its portfolio.

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Effectiveness and Efficiency of EM Cleanup Activities

Continued from previous page

REPORTING OF PROJECT METRICS:

The committee has reviewed sample copies of EM's project management reports, amongst other provided documents. These reports show EM extensively using EVM project control practices along with Capital Asset Project Dashboards, and Corporate Performance Measures.

Effective implementation of an EVMS requires a transparent and reliable process and approaches that explicitly and clearly highlight the project's temporal status. Such approaches bring transparency to cost and schedule overruns.

A robust, reliable, effective, and efficient governance process for the EVMS provides EM HQ with more clarity on projects' status. However, several reviews of EM's EVMS indicate issues with its implementation and governance process.

Examples provided by EM include:

The certified EVMS is not fully used; a governance process is not in place; and some datasets provided by contractors are not accurate, complete, repeatable and auditable (see Table 5.3 for more examples and references).

Further investigation of the linkage between the governance and data collection processes, on the one hand, and effective implementation of EVMS, on the other, could be of assistance to EM.

Throughout the review of documents that EM shared with the committee, DOE made several statements that led to specific concerns associated with EVMS and its implementation. Table 5.3 contains a list of statements that were made in the existing documents by EM and its contractors related to EVMS.

All of these issues indicate the need for a robust, reliable, effective, and efficient governance process for EVMS. Therefore, for **the second phase of this study, the committee plans to review EVMS governance in more detail, including:**

- Current EVMS governance process, the involved parties, and their roles and responsibilities.
- Current EVMS certification process and enforcement of such certification.
- Current data collection processes for EVMS to ensure they are current, accurate, complete, repeatable, and auditable.
- Current project control systems that EM actively uses.

Hopefully we have sparked your interest to read the [entire report](#) which contains even more interesting, meaningful, and useful information.

*Is your data and info **C**urrent, **A**ccurate, **C**omplete, **R**epeatable, **A**uditable and **C**ompliant®?*

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Behavior-Based Project Management

Ambiguity Aversion and Its Effect on Risk Identification

By Josh Ramirez

All humans have cognitive biases, regardless of their specific personality. These biases are generally a result of heuristics (mental rules of thumb) that the brain uses to reduce neural energy consumption.

Biases are even more prevalent in projects, because the time constraint of a project induces higher time-pressure. Hundreds of studies (including those in neuroscience) have shown that cognitive biases increase under time-pressure, thus increasing risk exposure and reducing project completion with resulting impacts to the bottom line.

Recently, analysis was done to consider the impacts of the *ambiguity aversion* (or *uncertainty aversion*) bias on project planning and forecasting. Ambiguity aversion is the tendency to prefer the known over the unknown. It is especially applicable in risk identification where people prefer known risks over unknown risks, and causes attention to be focused away from considering unknowns in a project.

In addition to risk consideration, the bias may cause people to forego consideration of alternatives if they have a higher degree of uncertainty. This lack of alternatives consideration may result in missed opportunities and unmitigated risk. Unmitigated risk has a direct impact to delivery, resulting in slowed projects, missed milestones, reduced client trust in monthly forecasts, and waste in resource allocation.

The ambiguity aversion bias, then, has a direct impact on DOE project completions and contractor fee.

Ambiguity Effect

A cognitive bias where decision making is affected by a lack of information, or "ambiguity." The effect implies that people tend to select options for which the probability of a favorable outcome is known, over an option for which the probability of a favorable outcome is unknown.



— Josh Ramirez is a project manager in the Washington River Protection Solutions' Earned Value Management System Compliance and Reporting organization, and a PhD candidate



It is Not One World — What We Do and How We Do it Matters!

Negligence blamed for building deaths

VietNamNet Bridge – A report from the Labour Safety Department shows that 33.8 per cent of construction-related accidents are caused by employer negligence.

Editor's note: The following article has been edited slightly from the original for clarity.

The report says little attention is paid to work-safety procedures, which often involves the use of low-quality scaffolding structures and outdated equipment.

It adds that many labourers are not given proper safety training or equipment, leading to many accidents because workers do not know safety rules.

Many workers also do not use safety equipment and violate labour safety regulations, the report said.

Construction experts say that many necessary inspections of equipment never happen. Contractors and subcontractors sometimes use poor quality and outdated equipment.

Experts say workers should be aware, protect themselves and pay attention to work-safety rules.

They say more attention should be given to inspections that can increase investors' awareness of work safety issues. Equipment and machines must be inspected before putting them into operation.

Injuries occur in many work places, but they are much more prevalent in the construction industry because of the often dangerous nature of the work.

In the first six months of 2017, construction-related accidents [in Vietnam] accounted for 25.8 per cent of accidents in the workplace and 24.2 per cent of workplace deaths, according to statistics from the Ministry of Labour, Invalids and Social Affairs Labour Safety Department.

Some of the most common accidents at construction sites involve scaffolds or other types of lifts or ladders.

In January 2018, at a construction site owned by Toyota Mo Lao Ltd Co on To Huu Street in Hanoi's Nam Tu Liem District, three workers died and three others were injured when scaffolding collapsed.

Local authorities claim that overloading was the main cause of the accident.

In September 2017, a scaffolding collapse at Vuon Xanh Kindergarten, also in Nam Tu Liem District, created panic but no deaths or injuries.

Experts say workers should be aware, protect themselves and pay attention to work-safety rules.

They have made a plea for more attention to be given to inspections that can increase investor awareness of work-safety. This includes inspecting equipment and machines before putting them into operation.



The scene of a scaffolding collapse at the construction site of Toyota Mo Lao Ltd in Hanoi killed three people and injured three others. – VNA/VNS Photo

Source: [VNS](#)

Just for Fun: January's Notable Events and Famous Birthdays

1 — The Julian calendar took effect (45 B.C.), patriot Paul Revere was born (1735), and the ball was first dropped at Times Square in New York City (1908)

2 — Georgia became a state (1788)

3 — **King Tut's tomb was discovered** (1924), the March of Dimes was founded (1938), actor Mel Gibson was born (1956), Alaska became a state (1959), and quarterback Eli Manning was born (1981)



4 — Sir Isaac Newton was born (1643), Utah became a state (1896), and the euro made its debut (1999)

5 — The Yankees purchased Babe Ruth from the Red Sox (1920), construction on the Golden Gate Bridge began (1933), and the space shuttle program was authorized (1972)

6 — Joan of Arc was born (1412), Samuel Morse demonstrated the telegraph (1838), New Mexico became a state (1912), Wheel of Fortune debuted on TV (1975), and quarterback Jameis Winston was born (1994)

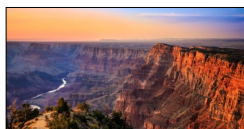
7 — The first U.S. presidential elections were held (1789), TV personality Katie Couric (1957), and actors Nicolas Cage (1964) and Jeremy Renner (1971) were born, and President Clinton's impeachment trial began (1999)

8 — Singers Elvis Presley (1935) and David Bowie (1947) were born

9 — President Richard Nixon was born (1913), and Apple launched iTunes (2001) and the iPhone (2007)

10 — The world's first subway system opened in London (1863), singer Rod Stewart (1945) was born, the United Nations met for the first time (1946), and boxer George Foreman was born (1949)

11 — **The Grand Canyon was declared a national monument** (1908), American League baseball adopted the "designated hitter" rule (1973)



12 — Amazon founder Jeff Bezos was born (1964), *Batman* debuted on television (1966), and a magnitude 7.0 earthquake struck Haiti (2010)

14 — The Treaty of Paris officially ended the American Revolutionary War (1784), rapper LL Cool J (1968) and actor Jason Bateman (1969) were born, the Miami Dolphins completed the only undefeated season in NFL history (1973), the Simpsons debuted on TV (1990), and basketball legend Michael Jordan retired (1999)

15 — Civil Rights activist Dr. Martin Luther King Jr. was born (1929) and **the first Super Bowl was played** (1967)



16 — The PGA was formed (1916), Prohibition went into effect (1919), the Chevy Corvette was first unveiled (1953), and Operation Desert Storm began (1991)

17 — Statesman Benjamin Franklin was born (1706), Americans overthrew the Hawaiian monarchy (1893), and boxer Muhammad Ali (1942) and former first-lady Michelle Obama (1964) were born

18 — Actor Kevin Costner was born (1955)

19 — Writer Edgar Allen Poe (1809) and singer Dolly Parton (1936) were born

20 — The "British Invasion" began when the Beatles released their first album in the U.S. (1964), **the Iran Hostage Crisis ended** (1981), and quarterback Nick Foles was born (1989)



21 — The Kiwanis Club was formed (1915), golfer Jack Nicklaus was born (1930), and the first case of COVID-19 in the U.S. was confirmed (2020)

22 — Abortion was legalized in the U.S., and President Lyndon Johnson died (1973)

23 — The world's deadliest earthquake killed 830,000 in China (1556), statesman John Hancock was born (1737), and the Frisbee was introduced (1957)

24 — Singer Neil Diamond was born (1931), **beer was first sold in cans** (1935), actor John Belushi was born (1949), and British statesman Winston Churchill died (1965)



25 — Transcontinental phone service began in the U.S. (1915), the first Winter Olympics were held in Chamonix, France (1924), the first Emmy Awards were presented (1949), and singer Alicia Keys was born (1981)

26 — The dental drill was patented (1875), actor Paul Newman was born (1925), television was first demonstrated to the public (1926), and guitar god Eddie Van Halen (1955) and hockey legend Wayne Gretzky (1961) were born

27 — Composer Wolfgang Amadeus Mozart was born (1756), the National Geographic Society was founded (1888), and three astronauts died in a launch pad fire aboard Apollo 1 (1967)

28 — **The space shuttle Challenger exploded** (1986)



29 — President William McKinley was born (1843), Kansas became a state (1861), baseball's American League was founded (1900), the first members of the Baseball Hall of Fame were elected (1936), and TV personality Oprah Winfrey was born (1954)

30 — President Franklin D. Roosevelt was born (1882), Adolf Hitler was named chancellor of Germany (1933), Mohandas Gandhi was assassinated (1948), musician Phil Collins was born (1949), the Vietnam War's Tet Offensive began (1968), and actor Christian Bale (1974) was born

31 — Slavery was abolished in the U.S. (1865), baseball legends Jackie Robinson (1919) and Nolan Ryan (1938) were born, President Truman announced the development of the hydrogen bomb (1950), and singer Justin Timberlake was born (1981)