Establishment Of The Digs PMO Program

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The Digs PMO (Project Management Office) is often referred to as the "Big PMO" not only because of its sheer volume of work, but because of its potential impact to the pipeline assets and its stakeholders. Take MAOP validation as an example. Performing direct assessments or digs to verify a pipeline's MAOP is not new, but as federal regulations become more stringent, the volume of digs will increase significantly, and operators need to find a way to keep up with the pace. Over the past six years, I've worked on over 1000 digs. For perspective, that's 1000 small excavations usually 10-15 feet long for the sole purpose of performing direct assessments and material validation on HCA and non-HCA pipelines. Due to the small scope of an individual dig project, it is very fast-paced, usually lasting one to three weeks in construction.

Why Dig?

In accordance with ASME B31.8S, direct assessments are performed to investigate and mitigate time dependent threats, resident threats, time independent threats, and human error. This includes the likes of external corrosion direct assessments, internal corrosion direct assessments, stress corrosion cracking direct assessments, In-line inspection direct examinations, casing mitigation, material verification, MAOP Validation, and weld verification, to name a few.

Although small in scope, digs can drive major impacts to the pipeline asset. A dig starts off as purely investigative, but it may result in a repair method that can be as simple as giving the pipeline a proper recoat or it can be as invasive as requiring an outage to replace the affected pipeline section. Because of this, digs need to be planned very carefully to minimize negative impacts to the pipeline's continued safe operation and service continuity. With the increased demand for direct assessments, a systemic approach is necessary to perform large volumes of digs without losing sight of the detailed analyses required. This is where a PMO can be very beneficial.

In traditional project management, we work in sequence: initiate, plan, execute, monitor & control, close. When one process is complete, only then can the next one begin. Typically, this method is more

suited for projects that anticipate few changes from start to finish. Here requirements are fixed, only cost and time vary.

A PMO, on the other hand, uses a parallel mode of management that allows companies to manage not by a central line of control, but by groups or functional teams. With digs, the scope of the project is much smaller in comparison to a strength test, In-line inspection, or replacement. Because of this, many digs projects on the same pipeline asset are forced to react to the waves of the bigger projects and can result in massive rescheduling. The PMO allows us to be proactive and determine when to properly execute the work. Not only does it provide more visibility, the PMO also creates an environment of teamwork and ownership.

Imagine the decisions you can make when you have the breadth of knowledge represented by all the subject matter experts together in one room. Functional teams have the authority to make on the spot decisions on their own and try to internally solve issues to avoid wasting time and effort. Being closely involved in the process, the combined functional knowledge within the PMO helps it tackle most of the challenges that can generally hinder progress.

Unless there is a need to make extreme decisions, team members rarely need to escalate trivial matters to their manager. Because of this, decisions are made and implemented quickly. In a typical Digs PMO meeting, we cover over 50 digs in just one hour! That's just over 1-minute per dig! We're able to do this because we focus only on the if the dig is on track towards meeting its next milestone, we move on to the next dig, period.

Discovery through Digs PMO	Solution
Dig is in the same jurisdiction as another dig	Maintain a single point of contact with the jurisdiction and share the same project resources to increase efficiency. Streamlined communications
Dig overlaps the same location as another dig	Perform one excavation to accomplish two or more goals
Dig is located where a replacement will occur	Determined the dig was no longer needed to be performed due to the upcoming replacement prior to the dig's compliance deadline

Priority Factors and Schedule Impacts

Express lanes at the supermarket are a simple and effective way to alleviate congested lines. With less items to buy, the quicker the line moves. When planning to execute a large volume of digs at one time, it can become increasingly challenging to determine which digs should be prioritized over others, but the challenges can be alleviated by utilizing a similar idea such as an express lane. There are many reasons why one dig should be prioritized over the other, but here the top six reasons based on my experience: location, permit lead time, planned outages, resourcing, funding and compliance deadlines. The priority of these factors will be based on their impact to other digs within the PMO and projects outside the PMO affecting the same pipeline asset. Let's take a look at the scenarios by fiscal quarter.

Quarter 1: You're reviewing how to plan the work before any digs are executed, so why not try to bundle them together geographically as much as possible? Perhaps it rains a lot this time of year, so let's work on the digs that are expected to have little to no groundwater first, perhaps in locations that are less susceptible to wet conditions, such as pavement, or are known to have less permeable soils.

Quarter 2: The weather is starting to clear up and you're receiving more digs systemwide, you can now determine how to bundle longer lead permits together so that they can be ready to execute prior to their compliance deadlines.

Quarter 3: You're receiving the last of the digs needed to execute in the year and you now have a full understanding of their potential impact to the system and customers. Impacts from planned outages from other workstreams should be a focus. We determine how to plan around them, paying extra attention

to the digs that may require outages and plan those strategically. That way, if those digs turn into immediates (thus requiring a temporary reduction of pressure), we can incorporate those outages into the system with minor impact to other outages that have been planned for as long as 12-15 months.

Quarter 4: We're now down to the wire! The end of the year is fast approaching and you're now on the last stretch of digs that need to be executed. Let's take a closer look at all of our assigned execution resources such as our pipeline engineers, construction, inspection, and direct assessment teams. This will help us determine how we can allocate the work so that the work is normalized throughout the teams at an aggregated level. You don't want to overload one construction crew when another crew is available and looking for work. In Quarter 4, we have to look at this frequently, especially considering the pace of Digs.

A quick review of the table at right shows that depending on the time of year, the factors that drive the work will change in priority. There is a much bigger emphasis on planning the work effectively by location and permit lead time in the beginning when possible, but the emphasis changes towards outages, resources, and funding towards the end of the year. And of course, meeting compliance deadlines is always highest in priority.

And then there's the "Code Red! We just got these digs, but we needed them done yesterday!" Although seemingly nerve-racking at first, the same principles apply. Depending on when we received those digs in the year, we can incorporate them into our current portfolio, determine how they should be prioritized, and then proceed with the work. These digs can still be executed successfully because we've created a PMO where we can relay the urgency in timely fashion, follow the measurable objectives to meet collective goals, and most importantly, we have appropriate leadership backing for our decisions. Sometimes, these digs turn out to not be so urgent as initially thought, so we take our foot off the pedal. Other times, we turn on the sirens and we move full speed, all hands on deck, to get these digs executed as soon as possible. I can recall a handful of digs in the past that we've executed from initiation to close in as little as one to two days! Although not sustainable, we made it happen because we needed to make it happen.

#	Priority Factors	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1	Location	High	High	Med	Low
2	Permit Lead Time	High	High	Med	Med
3	Planned Outages	Low	Med	High	High
4	Resourcing	Low	Med	Med	High
5	Funding	Low	Low	Med	High
6	Compliance Deadlines	High	High	High	High

Digs PMO Challenges

Hopefully you can see that having a PMO has its benefits - but it's not perfect. Here are some challenges that I'd like to share with you from my own personal experiences. Some of these challenges, we resolved one year but came back the next. Others may have been due to a change in leadership or program direction, and others we just learned to suck it up and deal with. Perhaps you will recognize similar challenges and may be able to analyze the root cause of these issues and determine a way to mitigate them back at home.

You may consider it convenient to take existing processes and procedures from other successful PMO's and apply them to the Digs PMO, but unfortunately, not all PMO's are created equal. This goes back to the PMO mandate. Why was it created in the first place? More likely than not, the mandate will not align with other PMO's as it is subject to interpretation by leadership. Take earned value management as an example. Using earned value management can be a great way to measure project performance and progress, but if it takes your internal systems one to two weeks to compute earned value, you may already be done with the digs project! It's like completing

a project and then afterwards you create the budget for that project. Completely backwards.

Transition from portfolio management to project management for new Digs: Digs may not be generated with enough time and/or information prior to the desired deadline to execute the work. This helps minimize the situations we've discussed earlier when we had to execute in one to two days. We made it happen. However, imagine all of the favors we had to seek, and the exceptions and waivers needed to execute that fast. Ultimately, this type of operation (where Digs is continuously urgent and important) is not sustainable and may infringe on the success of other Digs PMO projects.

Digs are purely investigative, but sometimes, you may come across digs that expose serious issues, and a decision was made to cut out and replace that section of pipe in timely fashion. When should you cut it out? How does it impact the system? Do we have funding for it? Do our existing permits allow us to perform this additional work? There are a lot of questions that need answering and without proper planning in the front end, our execution suffers on the back end. Is it worth the time, effort, and money to creating contingency projects ahead of time? Maybe not at the beginning of the year (as you've seen from the previous discussions regarding priority and schedule), but as we discussed earlier, contingency plans may be necessary in the 3rd or 4th quarter if you're trying to prevent or minimize loss gas to core customers in the winter season.

Unnecessary standby of resources onsite: The last thing you want is onsite resources waiting for a decision. Having one crew jump from one dig to the next helps minimize standby costs. It's easier to achieve this with proper pipeline management when a single crew can jump immediately to working on the next dig without waiting. By doing this, we've seen tremendous cost savings in upwards of 75% of mobilization and standby costs. But what if only one dig is needed for execution and the next closest dig is more than 100 miles away? Should we wait to execute until there are more digs close by? What if this dig has a much earlier compliance date than the rest? The construction phase of the project can be 70-80% of an entire project cost but is less than 15% of the entire project duration. Roughly translated, that means one day of construction could be worth three weeks in the office.

Conclusion

The Digs PMO has proven to be a valuable tool for pipeline operators because it:

1. Consolidates all phases of the Integrity Verification Process;
2. Increases visibility and communications among operations and other workstreams, and as a result;
3. Minimizes redundancies with projects inside and outside the PMO

Everyday, we deal with challenges that affect our lives, but it's up to us to pick our battles wisely. By understanding the overall organizational priority and having visibility into each other's strengths and weaknesses, we're able to foster an environment of openness, teamwork, and collaboration that leads to a whole lot more successful projects at the end of the day.