National Institute for Deterrence Studies & Peter Huessy Seminar

The Challenging Trajectory of Pit Production: Learning Lessons from History to Execute an Accelerated Production Strategy

with Sean McDonald

March 6, 2026 10:00 - 11:00 AM (Eastern)

Webinar Transcript

How to cite:

National Institute for Deterrence Studies, Huessy Seminar *"The Challenging Trajectory of Pit Production: Learning Lessons from History to Execute an Accelerated Production Strategy."* Virtual event, March [DATE], 2026.

Abstract

This Huessy Seminar, hosted by the National Institute for Deterrence Studies, examines the United States' effort to reestablish plutonium pit production at scale as a foundational requirement for sustaining a credible nuclear deterrent. Featuring Sean McDonald, Senior Advisor for the Integrated Plutonium Program, the discussion addresses persistent misconceptions about U.S. pit manufacturing capabilities, outlines current production requirements, and assesses the challenges of executing an accelerated production strategy within the nuclear security enterprise.

Drawing on historical case studies—from Rocky Flats to post–Cold War production gaps—the seminar highlights key lessons learned from prior attempts to reconstitute pit production, emphasizing the risks of halted production, workforce attrition, and repeated strategic pivots. McDonald details the current program of record, centered on a two-site production strategy at Los Alamos National Laboratory and the Savannah River Site, and explains why this approach offers the most viable path to meeting evolving Department of Defense requirements.

The seminar also explores broader structural challenges, including regulatory conservatism, workforce development timelines, supply-chain fragility, and the inherent complexity of large

© 2025 National Institute for Deterrence Studies. All rights reserved.

nuclear infrastructure projects. Particular attention is given to uncertainty surrounding plutonium pit aging and the shift in expert consensus toward renewed production as the most reliable risk-mitigation strategy.

Overall, the seminar underscores that restoring pit production is not merely a technical endeavor but a long-term national security commitment requiring continuity, disciplined execution, and sustained institutional and political support.

Executive Summary

The Challenging Trajectory of Pit Production: Learning Lessons from History to Execute an Accelerated Production Strategy
Huessy Seminar | National Institute for Deterrence Studies
Featuring Sean McDonald, Senior Advisor, Integrated Plutonium Program

In this virtual Huessy Seminar hosted by the **National Institute for Deterrence Studies (NIDS)**, **Sean McDonald**, Senior Advisor for the Integrated Plutonium Program, delivered a comprehensive assessment of the United States' effort to restore plutonium pit production at scale—an essential pillar of nuclear deterrence. Moderated by **Peter Huessy**, the discussion examined historical lessons, current strategy, and the structural challenges inherent in executing an accelerated production mission.

McDonald began by dispelling persistent misconceptions, emphasizing that the United States **does possess pit manufacturing capability**, citing the successful first production unit of the current pit design at **Los Alamos in 2024**. The central challenge, he argued, is not technical feasibility but **restoring sustained production "at rate."** Current Department of Defense requirements call for **80 pits per year**, with a recognized possibility that future geopolitical conditions may drive even higher demand.

The seminar traced the **history of pit production**, from Cold War–era high-volume output at Rocky Flats to post–Cold War decisions that deprioritized production in favor of stockpile stewardship and scientific certification. McDonald underscored a key lesson from repeated past failures: **stopping production erodes workforce skills, institutional knowledge, and momentum**, making reconstitution slow, expensive, and risky.

The current strategy—a **two-site solution**—was presented as the most viable path forward. This approach upgrades **Los Alamos PF-4** to support at least **30 pits per year**, while converting the former MOX facility at **Savannah River** into a production site capable of **at least 50 pits per year**. McDonald cautioned against further strategic pivots, noting that repeated changes in direction have historically undermined progress.

Events@Thinkdeterrence.com
© 2025 National Institute for Deterrence Studies. All rights reserved.

A major theme of the discussion was the inherent difficulty of **large, complex nuclear infrastructure projects**. Drawing comparisons to programs such as the Uranium Processing Facility, the Sentinel ICBM recapitalization, and even non-nuclear megaprojects, McDonald emphasized that cost overruns and schedule delays are not unique to pit production—but must be managed proactively through disciplined project execution.

Two primary drivers underpin the urgency of pit production: **evolving defense requirements** and **uncertainty surrounding pit aging**. McDonald highlighted the shift in expert consensus between the 2007 and 2019 JASON reports, the latter urging rapid reestablishment of pit manufacturing as a hedge against aging uncertainty. In his assessment, **new production is the most reliable solution** to manage long-term risk.

Looking ahead, McDonald outlined efforts to **accelerate schedules within existing infrastructure**, reassess conservative regulatory interpretations while maintaining safety and security, leverage underutilized facilities across the nuclear enterprise, and stabilize the highly specialized workforce required for sustained production.

The seminar concluded with a robust discussion on congressional perspectives, workforce and supply-chain risks, design flexibility, and the role of the nuclear hedge. The overarching message was clear: **restoring pit production is a national security imperative that requires continuity, discipline, and sustained political and institutional commitment.**

Unabridged Transcript

(Note: there will invariably be some word errors in the following transcript.)

00:00:19:00 – 00:00:46:02
Kimberly Cherington
Good morning. I'm Kimberly Cherrington, and on behalf of the National Institute for Deterrence Studies, or what we call NIDS, it's my pleasure to welcome you to today's seminar with our friend Sean McDonald. Mr. McDonald serves as a senior advisor for the Integrated Plutonium Program, advising NNSA leadership and coordinating decisions across the nuclear security enterprise. We're very fortunate to have him with us.

00:00:46:02 – 00:01:19:11
Kimberly Cherington
This morning—next week, we will host Paige Gasser, a senior fellow at the Center for Global Security Research at Lawrence Livermore National Lab, where she will share insights on the strategic approach to U.S. extended deterrence. To register, we invite you to visit our website at Thinkdeterrence.com. Throughout today's presentation, we encourage you

© 2025 National Institute for Deterrence Studies. All rights reserved.

to submit your questions using the chat or the Q&A button at the top of your screen, and we will address them during our dedicated Q&A portion of the seminar.

00:01:19:12 – 00:1:34:00
Kimberly Cherington
Now, I'm pleased to introduce our host for today's discussion, Mr. Peter Huessy. He is president of GeoStrategic Analysis and a senior fellow here at NIDS. Peter, over to you.

00:01:34:02 – 00:02:02:06
Peter Huessy
Thank you, Kimberly. In welcoming Sean McDonald, what I asked Sean to talk about today is this issue of what should be the pit production of the United States over the next couple decades. And the reason I ask that question is that in the House Armed Services Committee, over the last number of years, there have been amendments to reduce pit production to no more than five pits.

00:02:02:07 – 00:02:28:13
Peter Huessy
And by 2050, compared to the current requirement—which is, I believe, 30 and 50 pits respectively, a total of 80 by the mid-2030s—that has been the only alternative sitting on the table. But it has not received much detailed discussion. And therefore, that's why I asked Sean to come and talk to us about the program of record on pit production.

00:02:28:15 – 00:02:39:13
Peter Huessy
Why we were going in this direction. And Sean, I want to thank you on behalf of NIDS and our audience for coming out here to talk to us. Over to you, sir.

00:02:39:14 – 00:02:45:04
Sean McDonald
So the first thing I wanted to do was start with what I'll call misperceptions.

00:02:45:04 – 00:03:03:13
Sean McDonald
The first one I've already kind of alluded to: there is a misperception that we can't make pits. A colleague of mine in the Pentagon said, "You can't be a nuclear power if you don't have the ability to make pits," a crucial component of a nuclear weapon. And I can emphatically state that we do have that ability.

00:03:03:14 – 00:03:31:13
Sean McDonald
Technically, we had a first production unit of the current product—the 80-7-1 pit—at Los Alamos in 2024. And we continue to make what we call war reserve pits for that program at Los Alamos. So, we do have the ability to make pits. What we're doing now is really accelerating our efforts to get pits made at rate Peter alluded to this earlier.

© 2025 National Institute for Deterrence Studies. All rights reserved.

00:03:31:13 – 00:04:02:03
Sean McDonald
We have a requirement for 80 pits a year. Based on DoD requirements—which change regularly—we may at some point be asked to make more. So, our main goal is to expand capacity to at least 30 pits at Los Alamos and at least 50 pits at Savannah River.

00:04:02:04 – 00:04:18:09
Sean McDonald
We use what's called a two-site solution: Savannah River making at least 50 pits a year and Los Alamos making at least 30 pits a year. I'll describe how we're on the trajectory to do that. The second myth I want to dispel is that we can't do projects.

00:04:18:10 - 00:04:51:00
Sean McDonald
This one's a little bit trickier, maybe a little bit more controversial. But I believe that, while we have struggled and I'll talk a little bit about, struggles for what we call big box facilities or big facilities to make, especially in nuclear space, to make special components. We have demonstrated a lot of success in the last couple of years at construction projects, especially at, P4 plutonium facility for Los Alamos.

00:04:51:01 - 00:05:14:08
Sean McDonald
We're doing something very interesting at Los Alamos. We're turning a research and development facility into a production facility. And so, what we're doing is not only producing pits at Los Alamos but also reconfiguring the plant so that it's capable of doing more pits again, at least 30 pits a year. I want to talk a little bit.

00:05:14:08 - 00:05:34:13
Sean McDonald
So that's the second myth. The third myth is that we haven't been thinking about this until recently. I joke that this is my fourth attempt to reestablish pit production in the US. I'll talk a little bit about which those other three were... There were other efforts, but I want to highlight three specific efforts, especially in interest of time.

00:05:34:15 - 00:05:58:12
Sean McDonald
But we have been thinking about this for a long time. The bottom line is that there are some common themes that I want to discuss throughout the talk. There are some, very important kinds of geopolitical drivers that both now, I believe, support, consensus on the need to make pits at rate, but previously had not.

00:05:58:12 - 00:06:31:01
Sean McDonald

And I'll talk a little bit about what that means when I talk about the history of pit production. But the bottom line is that national policy has a direct impact on big technology projects. And all of

Events@Thinkdeterrence.com
© 2025 National Institute for Deterrence Studies. All rights reserved.

the ability or all of the initiatives to reestablish pit production are big technology projects. The other kind of big theme I want to talk about is that the geopolitical environment often changes faster than new capacity can be added, especially in nuclear space.

00:06:31:02 - 00:06:57:04
Sean McDonald
Nuclear facilities are extraordinarily complicated. They're built for rigorous safety standards, including seismology, size, and seismic standards. And they take a long time to, to construct. I'll have several examples of that, in the talk, but I wanted to highlight that, what that means is that we need to think about capacity in a different way.

00:06:57:04 - 00:07:26:01
Sean McDonald
So, one of the things that I'll do, to wrap up the talk is, discuss a little bit about what our current strategy is. The third kind of common theme is that what I call big box construction and big technology projects, are inherently difficult. This isn't just in NNSA space. Although we have several examples in NNSA space, the uranium production facility, UPF, has struggled with schedule and, and budget.

00:07:26:03 - 00:07:53:05
Sean McDonald
We struggled with the MOX, the Mixed Oxide Fuel Facility, which is now being turned into the Savannah River pit production facility. We struggled with the cost and the schedule on that big nuclear facility as well. But I want to highlight that this isn't a problem, just endemic to NNSA. For example, the Sentinel program, in DOW just recently went through a Nunn McCurdy breach.

00:07:53:05 - 00:08:16:10
Sean McDonald
So, it exceeded its allocated budget, I believe, by 50%. And they're doing a relook at how best to get that project back on back on schedule. That is an extraordinarily complicated project. Trying to recapitalize, the three northern tier bases, to re-energize the land based, part of the deterrent.

00:08:16:11 - 00:08:44:10
Sean McDonald
Very complicated command and control, very complicated. In terms of the missile technology that we're developing, and that project has suffered from delays, schedule delays and from budget overruns. I'll also highlight, in kind of non-nuclear space, the F-35 program in DOW has also struggled with cost and budget over time. Outside of defense, we have other examples like high-speed rail in California.

00:08:44:10 - 00:09:12:06
Sean McDonald
So, my point here is not to be defensive about our failings. We're working very hard to, to clean up our project management and get projects done on time. But these big technology projects are inherently difficult, and hard to, hard to get completed on time and on budget. The good news is that, and I mentioned this already, the national security enterprise can move expeditiously.

© 2025 National Institute for Deterrence Studies. All rights reserved.

00:09:12:07 - 00:09:37:06
Sean McDonald
I meant, or I mentioned earlier, the pit first production unit in 2024. And we now have a very feasible path to at least 30 pits, a year at Los Alamos. I want to highlight, so this is all fairly recent. That's 2024 is when we did the first production unit, the big budget uptick at Los Alamos came in, 2021.

00:09:37:07 - 00:10:04:08
Sean McDonald
And, our lab director joked at Los Alamos that we went from a three to a $4 billion lab in essentially a year that extraordinary uptick in budget is very difficult to, digest in a relatively short period of time, due to a lot of systemic issues such as, queue clearances. You need to, to get queue clearances, for people to work in the facility.

00:10:04:09 - 00:10:29:14
Sean McDonald
We also essentially think of workers as needing about three years to become, really, capable glove box workers. So, what you see now, in a very positive way, is the momentum from that original uptick in sustained budgets. You see that now translating into success at Los Alamos, both in production space and in project space.

00:10:30:00 - 00:10:52:11
Sean McDonald
The other thing I'll mention is that R&D, research and development and repurpose facilities, frankly, are not ideal for production. And I'll talk about some of the efforts we had to get more, more dedicated facilities for production in the last 30 years. But they can work. And we're showing that they can work at PF4.

00:10:52:14 - 00:11:17:09
Sean McDonald
We're also looking at other options throughout the enterprise were, nuclear space could be repurposed to support production. So those are some of the themes I'll talk about. So, let's talk a little bit about history, the early history. Of course, Los Alamos was the original producer of pits in the late, mid to late 40s.

00:11:17:10 - 00:11:42:15
Sean McDonald
And then we built a purpose-built facility called Rocky Flats, which was in Colorado and, delivered from hundreds to, up to thousands of pits, a year. So, to wrap your head around the requirement we have currently for at least 80 pits a year, versus what Rocky Flats was, was capable of producing several reasons for that.

00:11:42:15 - 00:12:07:00
Sean McDonald

© 2025 National Institute for Deterrence Studies. All rights reserved.

First of all, geopolitically, we had a stockpile in the roughly 30,000 range in the early 60s. So, to support a stockpile of that size, you, of course, need a production facility that's not just sized appropriately, but also dedicated to producing, just one component in this case, pits. Rocky Flats also did a lot of development work.

00:12:07:00 - 00:12:32:05
Sean McDonald

So, it was an extraordinarily busy, busy plant, again, purpose built for working with, with plutonium and working with, plutonium pits, both for development and production. Rocky Flats closed in the or was actually, first shut down in the late 80s and then closed in 1992. And I don't want to get into too much of...

00:12:32:05 - 00:12:55:08
Sean McDonald
So, it was basically closed for it was raided by the FBI in 1989 for environmental reasons. Maybe if we have a little time for questions, we can address this in the chat. But I posed the question sometimes, to folks. Do we think that would have happened in the early 80s? And, and I do that to be purposely controversial.

00:12:55:08 - 00:13:15:10
Sean McDonald
We had begun of a huge buildup of the stockpile in the early 80s. Rocky flats was asked to produce hundreds to thousands of pits during that time. The Cold War was towards the end and in fact ended in the late 80s. And Rocky Flats was, was shut down in that same time period.

00:13:15:11 - 00:13:40:13
Sean McDonald
But my point here is not to I don't want to get into the details of, you know, what, what are the environmental complaints? Whether or not they were, they were legitimate. There were certainly, lots of good reasons or there were, there were lots, lots of
discussion about what environmental standards Rocky was working to and whether or not they were doing it appropriately.

00:13:40:15 - 00:14:02:05
Sean McDonald
But the national need for pits by the end of the 80s had also declined. And I pose that,
again, just to to try to put it in context, the national, the national geo and geopolitical environment does matter, I think in, in how these facilities are built, in the mid 90s. And we'll get here quickly into the history.

00:14:02:06 - 00:14:26:12
Sean McDonald
In the mid 90s, we were, in Los Alamos at the time, involved in what was called the pit Rebuild project. And pit rebuild was specifically not designed to be a production effort. It was designed to

© 2025 National Institute for Deterrence Studies. All rights reserved.

recapture the technology or to capture the technology from the Rocky Flats plant, so that we could use that technology and other, in other brand-new facilities.

00:14:26:14 - 00:14:46:13
Sean McDonald
The specific facility we were targeting was a facility called the Modern Pit Facility, which was supposed to begin in 2005. The modern facility had a nominal capacity of between 150 and 250 pits a year. So, we were thinking and again, one of the myths I want to dispel is that we haven't thought about this for a while.

00:14:46:14 - 00:15:14:01
Sean McDonald
We have been thinking about it. We thought about it even during the 90s, even during, the stockpile stewardship era when we were consciously, consciously feeding the laboratories, the design agencies and design laboratories with, with, big science, projects such as NIF and DARHT, those are those are big facilities that we use to certify the stockpile.

00:15:14:02 - 00:15:40:11
Sean McDonald
And we consciously did less in the production arena. Several reasons for this. The first, most obvious one is geopolitical. The adversary, the main adversary. We had the cold War, was no longer perceived to be, a significant threat and so very difficult to argue for a robust production environment when, when there's no obvious, threat.

00:15:40:12 - 00:16:06:05
Sean McDonald
First point. The second point is the stockpile is relatively young. And this is another kind of thing that goes throughout the history of food production at every kind of big step, modern facility being the first one. We, we really kind of thought through. Well, how old is the stockpile? Is it really necessary to make again that the modern facility would have been 150 to 250 pence a year?

00:16:06:07 - 00:16:39:14
Sean McDonald
Is that really necessary? In the case of the modern facility, we're also coming off of two very significant events. The first was 911. So, the nation pivoted to the war on terror. And the second was, the signing of the Moscow Treaty in 2002, which cap strategic delivery systems for Russia and the US. In that environment, when you are capping strategic delivery systems, it's very difficult to argue for a brand-new facility at those, very significant, rates.

00:16:39:15 - 00:17:14:02
Sean McDonald
And in fact, under the George W Bush administration, the modern pit facility was in fact canceled. In its place was supposed to be, what we call CMR-NF, CMR is a facility at Los Alamos, the chemistry and metallurgical facility; the NF stands for nuclear facility. It was an attempt to, right next to plutonium facility 4, put another big nuclear facility that would enhance the ability to make pits at Los Alamos.

Events@Thinkdeterrence.com
© 2025 National Institute for Deterrence Studies. All rights reserved.

00:17:14:03 - 00:17:39:01
Sean McDonald
I want to mention two. In the meantime, Los Alamos in the early 2000 had done a relatively small, limited production of some pits. So, again, I want to dispel the myth that we can't make pits. We made them in the early 2000 at Los Alamos, not just for development. We made war reserve pits. And then we've recently begun, begun pit production effort at Los Alamos again.

00:17:39:02 - 00:17:58:09
Sean McDonald
But to two points that are really important here. One is, after that initial run of pits at Los Alamos, we stopped producing and the facility went into some, some kind of version of a of a warm standby. One of the big lessons I want to hammer home is that we never can stop producing the.

00:17:58:09 - 00:18:27:02
Sean McDonald

These. This is not true, just for pits. But pits is a very particular niche area where we need to continue production in order to maintain those.. those capabilities. So that's one very significant lesson that I believe we've learned and will continue throughout the next several decades. That's the first point. The second point is, the CMR, CMR nuclear facility was intended again.

00:18:27:02 - 00:18:50:15
Sean McDonald
We've been thinking through this was intended to supplement PF4, and make at least 80 pits a year with a potential annex that would bring us to 80 to 100 pits a year. And so, the CMRR nuclear facility, had it been, completed; it would have been, would have allowed us to, to make the order of 80 to 100 pits a year.

00:18:51:01 - 00:19:19:14
Sean McDonald
That was in the early 20 tens, at the same time, President Obama issued his Nuclear Posture Review to reduce the role a number of nuclear weapons, at the same time, in that NPR, nuclear Posture Review, he also, pushed for the, completion, construction and completion of CMR NFso again, really was thinking through, yes, we'll reduce the role a number of nuclear weapons.

00:19:19:14 - 00:19:45:08
Sean McDonald
But in the meantime, we know we need to recapitalize some of these facilities, but the stockpile is still relatively young. And again, the bulk of the stockpile was built, designed, and built in the 1980s. So still relatively young. And the price for the CMRR nuclear facility began to escalate beyond the point that politically it was it was feasible to complete.

00:19:45:10 - 00:20:14:00

© 2025 National Institute for Deterrence Studies. All rights reserved.

Sean McDonald
And so that's what I'll call kind of the second big, failed effort to, to reconstitute pit production. I want to mention two others very quickly and then get on to the current strategy in the interest of time. We had a modular concept that we conceived in the 2014 timeframe. And the idea here was that instead of building these big box facilities that were very difficult to, to complete because they were extraordinarily expensive.

00:20:14:04 - 00:20:45:01
Sean McDonald
Again, modern pit facilities, MRR-NF, two examples of that, we would build smaller facilities and take parts of what we call the process flow sheet. We would take some parts of the production effort and put them in smaller, purpose-built facilities, link them together, and then essentially modular early, create a production effort. This concept would have been much, much cheaper for each individual module.

00:20:45:01 - 00:21:09:04
Sean McDonald
So, you have a better cash flow issue, on a year-to-year basis. And also, would be, have advantages for seismic requirements because they would be smaller. You could build them closer to the ground. The idea for the original modular concept was to bury the modules, which would have, enhanced, seismic, requirements as well.

00:21:09:05 - 00:21:34:10
Sean McDonald
So that modular concept actually was approved by the Nuclear Weapons Council. So, and NNSA, in conjunction with, DoD, agreed that this was a good path forward to start modular design and construction. And two things happened at that time. Again, not just geopolitical, but also, issues in our enterprise.

00:21:34:10 - 00:22:03:02
Sean McDonald
Los Alamos had issues with its criticality safety program. So, it shut down the plutonium facility for about three years. And at the same time, the mixed oxide fuel, facility, which was being built at the Savannah River site, that facility was canceled also after we invested some, I believe, on the order of $8 billion in that facility.

00:22:03:03 - 00:22:38:00
Sean McDonald
And so, in that environment, you have a modular concept that would be sited at Los Alamos. But there are issues with Los Alamos' existing plutonium facility. And you have this nuclear facility at Savannah River, which is essentially the, I apologize. Yeah. This issue with Savannah River, which is a nuclear facility and available for potential other nuclear application.

00:22:38:02 - 00:23:03:13
Sean McDonald

© 2025 National Institute for Deterrence Studies. All rights reserved.

And so, the point I'm driving at here is that, yes, there was a plan for modular construction, but you had two things that happened that, made it, made it very attractive to use the, the mixed oxide fuel fabrication for pit production. And again, Los Alamos was struggling to get its plutonium facility online in 2017.

00:23:04:01 - 00:23:36:03
Sean McDonald
We then, basically crafted the two-site solution. And the two-side solution is what I alluded to earlier, Los Alamos PF4 would be upgraded from an R&D facility to a production facility for at least 30 pits a year. And then, the SR-PPF would be at least 50 pits a year.

00:23:36:04 - 00:24:07:05
Sean McDonald
And that is the current strategy we're on. So with that, I'm going to, kind of, turn to the current strategy and talk quickly about drivers. There are basically two big drivers that we have for pit production. The first is DoW requirements, and the second is pit aging. On the DoW requirements front, we have basically a program of record, which we're currently actively working towards.

00:24:07:05 - 00:24:43:03
Sean McDonald
And will meet the requirements for. But DoW requirements are changing as they react and plan for new geopolitical realities. And so, we need to create a pit production capability that is agile enough to be able to handle new requirements from DoW. First point. Second point, pit aging is, one of the big drivers for pit production in that, there's uncertainty around how long, pits last.

00:24:43:04 - 00:25:05:10
Sean McDonald
And I just briefly want to highlight two Jason reports. The Jason's, is an independent, technical organization that looks at, and programs in nuclear space. And in 2007, they basically said this is a direct quote.
“There's no degradation in performance of primaries.” The pit goes into a primary...
“due to plutonium aging.”
That would be cause for concern.

00:25:05:12 - 00:25:35:14
Sean McDonald
So, in 2007, the Jasons were, were very confident that pits would age, long and gracefully. In 2019, Their unclassified summary of a classified report. The direct quote is,
“We urge that pit manufacturing be reestablished as expeditiously as possible.”
The reason for that is, and they also highlighted that we need to really start examining the factors around, pit aging.

00:25:36:00 - 00:26:00:11
Sean McDonald

Events@Thinkdeterrence.com
© 2025 National Institute for Deterrence Studies. All rights reserved.

We are doing that. We're, NNSA has a has an extensive program to look at pit aging, but there is uncertainty around how long pits last. In short, that uncertainty for me and, and those of us at NNSA, means that the only real answer to solve that uncertainty is new pit production.

00:26:00:12 - 00:26:30:03
Sean McDonald
There is, again, with the uncertainty around pit aging, with changing DoW requirements, the, the best, solution is to expand capacity for as many pits as possible within the existing infrastructure and simultaneously accelerate what we're doing at, at SRPPF, at Savannah River, as well as PF4 at Los Alamos.

00:26:30:04 - 00:26:53:06
Sean McDonald
So, I want to talk quickly about the current strategy and then open for questions. So, the current strategy again, I mentioned, it's a two-state solution; Savannah River and Los Alamos. In addition to accelerating the project schedules, and we have several efforts underway to do that, we are also doing two things.

00:26:53:06 - 00:27:27:09
Sean McDonald
One is looking at regulatory requirements that drive limitations in production. And I just want to underscore that we are committed to doing things safely and securely. We have also historically, over the last 30 years, been very risk averse in how we implement, regulatory requirements. I'll give one example. There is a statutory requirement to limit worker dose at five rem.

00:27:27:10 - 00:27:54:03
Sean McDonald
And what we in the enterprise had done was limit that to far less than five rem for very good reasons. Those reasons were that we operate under the principle of LRA as low as reasonably achievable, and in an R&D environment, worker dose can be dramatically less than the actual statutory limit, which is derived from what is safe to the worker with some margin.

00:27:54:03 - 00:28:20:10
Sean McDonald
So, so that statutory limit is considered safe. We have kind of artificially capped ourselves at lower rates because there was no need in a non-production environment to go higher. And we're looking at that at various sites now, is there potential to increase? The allowable worker dose again? Well, within the statutory safe limit.

00:28:20:11 - 00:29:01:07
Sean McDonald
But in order to accommodate what is now, a reasonable limit based on doing production in the facility as opposed to research and development. Also looking at security features that were designed for what we call a design basis threat from the post 9/11 era. So, we're still working to, in some cases, security, where we have very, forward leaning, significant efforts to relook at security

© 2025 National Institute for Deterrence Studies. All rights reserved.

based on the current threat environment as opposed to a post 911 security environment, which could also open up the aperture for, for production.

00:29:01:09 - 00:29:23:08
Sean McDonald
The other big, big effort we're doing, I mentioned accelerating project schedules. The other big effort is to look at existing facilities throughout the enterprise that are currently underutilized, but could be brought to bear for, for production. And so, for example, we have facilities at Lawrence Livermore that could be, could be utilized.

00:29:23:08 - 00:29:48:03
Sean McDonald
We're studying whether that's possible, as well as facilities at Savannah River and elsewhere in the enterprise. So, there is also a big effort underway to, to look at other facilities and what they might be capable of supporting for pre-production writ large. I want to end with and again, my apologies that this was truncated, but I want to end with the following kind of lessons learned.

00:29:48:04 - 00:30:25:15
Sean McDonald
Don't stop producing when once you start producing, it's very difficult to recover. Recover the ability both from a worker skill standpoint, equipment standpoint. So don't stop producing and we have no intent to. Reexamine risk acceptance while remaining safe and secure. Another big theme for us is to look at how conservatively are we interpreting regulations, and do they provide constraints that we can overcome while still remaining safe and secure. facilities?

00:30:25:15 - 00:30:58:05
Sean McDonald
Leverage existing facilities, I've already mentioned that. And then one last thing I'll mention is, be careful about the pivot. And what I mean by this is we have pivoted many times. That's this truncated version of pit production, modern pit facility, CM RNF modular. We finally landed on the two-site solution. At every pivot, we lose momentum. And so be very careful about pivoting again from the current strategy and plan which is, two sites solution with Los Alamos and Savannah River.

00:30:58:07 - 00:31:03:11
Sean McDonald
And with that, I'll end I see Peter is poised to, to get questions keyed up.

00:31:03:13 - 00:31:27:00
Peter Huessy
Thank you very much, Sean. A question here is what is the status of two congressionally directed reports? One is the Office of Enterprise Assessments Report: Leadership and Management of Plutonium and Pit Production Mission. The second one is the 2025 Jason Pit Aging Study. And the question is, have the reports been completed, and when will versions be publicly released, if you know?

Events@Thinkdeterrence.com
© 2025 National Institute for Deterrence Studies. All rights reserved.

Sean McDonald
I know both studies have been completed in draft form. But I have not seen final versions on either report.

00:31:38:00 - 00:31:49:12
Peter Huessy
Okay, there's a mention that David Beck came out with proposal that we do 60 pits a year. What was the driver for that conclusion? If you know.

00:31:49:13 - 00:32:14:14
Sean McDonald
So, this really goes to the point that I tried to make earlier, which is, we have two basic drivers for production. One is DoW requirements, which are changing. And, and frankly,
we don't anticipate going down. So, the current requirement for 80th may very well, 80 combined with the two sites may very well be, be too low.

00:32:14:15 - 00:32:30:12
Sean McDonald
And then the second is uncertainty surrounding, pit aging. So basically, the goal is to try to expand capacity as much as we can to address those two drivers.

00:32:30:13 - 00:33:01:00
Peter Huessy
The next question has to do with is something I've thought about is... what are the biggest misperceptions on the Hill in Congress about whether or not you go forward? Because the debates that have been held at the House Armed Services Committee last couple of years have been on a proposal by Mr. Garamendi to reduce pit production to no more than five pits per year and to do so by 2050.

00:33:01:01 - 00:33:19:01
Peter Huessy
And the debate has been pretty perfunctory. And, to be honest with you, on both sides, not very well informed, but what's your sense as to the biggest challenges you have with respect to, public diplomacy, as I call it, with respect to getting Congress to look at this.

00:33:19:02 - 00:33:34:08
Sean McDonald
Yeah. It's a great question, Peter. I actually see it a little bit differently. I, I view there, currently being kind of a broad bipartisan consensus on the need to build facilities to make pits at rate.

00:33:34:09 - 00:33:37:01
Peter Huessy

And I think I would agree with that.

00:33:37:02 - 00:33:59:02

© 2025 National Institute for Deterrence Studies. All rights reserved.

Sean McDonald
Yeah. And I think that's reflected in the budgets as well. So I, I think there you know, there's always room for healthy debate, but I think the ability to make pits at rate is, is actually fairly well, established now, even on the Hill. And the budgets are following that.

00:33:59:04 - 00:34:18:13
Peter Huessy
Another question is there was a notice a question about 87-1 and the W 93 pit reuse. Does that change the program of record and why reuse if the pits are, need to be replaced?

00:34:18:14 - 00:34:50:15
Sean McDonald
So, there are lots of, not lots. There are several options we have for, for new and life extended systems. So in in some cases we do look at whether or not we can, we can reuse pits. In some cases we want new production. In some cases we may want a combination. So, that's there's a very kind of rigorous process to assure ourselves that if we were to have reuse candidates, they would be fit for purpose.

00:34:51:01 - 00:35:10:00
Sean McDonald
And, and we also are driving very hard to, to have new pit production for current and for current planned and potentially new systems that are, that have not yet been, been discussed.

00:35:10:01 - 00:35:18:07
Peter Huessy
In my follow up question is you mentioned the 2019 Jason Report.

00:35:18:09 - 00:35:33:13
Peter Huessy
What did they discover in the 2019 report that was not in the 2007 report? That led them to recommend quite strongly, actually, that we get into the business of pit production.

00:35:33:14 - 00:36:12:09
Sean McDonald
So, I think this is kind of the natural, scientific method, for lack of a better word. We've been working on studies for aging. We continue to work on them and, my sense is that their views, I don't want to say they changed dramatically. I think their views are that we need to continue to study pit aging, but that, and I mentioned this before, the easiest solution around the pit aging uncertainties is new pit production.

00:36:12:11 - 00:36:29:13
Sean McDonald
So, I, you know, I don't think we can point to any one thing, but I think over that intervening 15 years or so, they realize that, that maybe the pit aging work that we've done, could also be supplemented by new pit production.

Events@Thinkdeterrence.com
© 2025 National Institute for Deterrence Studies. All rights reserved.

00:36:29:14 - 00:36:58:00
Peter Huessy
We have a question from, we have a colleague all the way from Burkina Faso in West Africa who comes on every one of our... She's actually doing some work in that part of the world and going in terms of, I believe, graduate school. And her question is the following. How do the lessons learned from history inform our management of the risks related to skilled labor in the supply chain, in order to avoid the production delays documented previously.

00:37:00:03 - 00:37:02:11
Sean McDonald
I'm sorry, could you repeat the first part of the question?

00:37:02:13 - 00:37:13:01
Peter Huessy
How do the how do the lessons learned from the history inform our management of risks related to skilled labor in the supply chain?

00:37:13:03 - 00:37:39:00
Sean McDonald
It's a really interesting question. I think I mentioned this earlier. It takes about three years for us to get glove box trained workers. And so when you think about, when you think about ending production and then having to restart it, you do have, have, have technicians and staff members who have been working in gloves on R&D projects, but it is slightly different for production.

00:37:39:00 - 00:38:20:03
Sean McDonald
So, what we really need to think about is how do we maintain that trained, and qualified workforce, really for the foreseeable future? That's a really difficult problem. So supply chain is also interesting. A lot of the I mentioned, I mentioned problems in, in many different big construction projects and many of those are supply chain related and especially in the aftermath of Covid, we saw a bunch of supply chain ripples which are now starting to work themselves out of the system.

00:38:20:03 - 00:38:24:12
Sean McDonald
But there has been a delay due to those.

00:38:24:13 - 00:38:44:13
Peter Huessy
I want to ask, Jim Petrosky, our president, if you'd like to ask a question, but also Don cook, who has been a speaker and is going to come back on another on the same panel with respect to nuclear testing. So, Don, if you have a question, please let us know and just ask our guest if you would please.

00:38:44:15 - 00:39:11:14
Peter Huessy

© 2025 National Institute for Deterrence Studies. All rights reserved.

And also, we have Bill Ostendorff, who is former professor at the Naval Academy, but also been on the Hill. And, and NNSA and Bill, if you have a question, please ask it as well, and I'll turn it over to Don cook, then our president, and then anybody else who'd like to raise their hand, Kimberly will unmute you and you can ask away.

00:39:12:00 – 00:39:42:15
Don Cook
Sean, can you hear me? ... I want to thank you for the service you've provided to the nation in your "pit czar role"... I know, you know, from the plutonium study that, was being done by AC&S and asked that, Rear Admiral Steve Johnson chaired, and it had Bill Goldstein, Paul Homer, a couple of former lab directors, John Harvey, Tony Roland.

00:39:43:00 - 00:40:06:15
Don Cook
One of the key recommendations was that because of the difficult decision making within NNSA, somebody be, put in the, in the role of having the ability to advise the administrator directly on decisions and you've been doing that, and I, I just want to thank you for stepping into the breach. Thank you for that role.

00:40:07:00 - 00:40:37:12
Don Cook
Well, my question is, a little bit different than, you know, in the times of the Rocky Flats era. And, what the pit needs were, we were continually making systems smaller and lighter weight, which put the pits closer to the edge of performance better. We know that they're all good. We know that the performance of pits and the current stockpile is just fine.

00:40:37:13 - 00:41:15:09
Don Cook
At the same time, something that could make pit manufacturing easy. You're easy or sorry is to go back a step with the many designs that we have from the underground test history that would add a modest amount of plutonium. The pit would still keep these pits one point safe, and I wonder if you and your colleagues and Dave Beck, are considering that, given that the labs Los Alamos and Livermore have said yes, that's actually possible to do.

00:41:15:09 - 00:41:19:04
Don Cook
Over to you. And again, thank you for your service.

00:41:19:06 - 00:41:46:04
Sean McDonald
Thank you so much, Don. Great question there. I have a whole other talk, in, another space on, on design implications for pit production. The short answer is we're absolutely looking at that, as well as other, other potential design, design changes that could, that could accelerate production. So, 100% that's part of the equation.

00:41:46:04 - 00:41:53:15

© 2025 National Institute for Deterrence Studies. All rights reserved.

Sean McDonald
I didn't talk about it much in this venue, but that's a huge component of what we're looking at.

00:41:54:01 - 00:41:55:13
Don Cook
Thanks, Sean.

00:41:55:14 – 00:42:16:10
James Petrosky
Hi, Sean. We're short on time, but I wouldn't mind a quick answer on this. We often talk about pit production, but how does the hedge fit into all of this as we move into the future?

00:42:24:04 – 00:42:50:09
Sean McDonald
That's a really interesting and complicated question...

00:42:24:04 - 00:42:50:09
Sean McDonald
That's a really interesting, kind of complicated question. I mean, I think of, and worthy of a lot more time than the minute or so, but, one of the ways I, I'm trying to simplify the problem, to be honest, we know we have, drivers, from DoW including aspects of the hedge that that factor in.

00:42:50:10 - 00:43:12:14
Sean McDonald
We know we have pit aging drivers. And so, the way I'm trying to simplify the problem is how can we maximize capacity within the existing infrastructure. But the hedge is certainly one component of that. But it won't any hedge requirements or hedge, considerations, I, I believe won't give us a reduced requirement, if that makes sense.

00:43:12:15 - 00:43:23:14
Sean McDonald
So I, I get to focus just on full bore ahead trying to figure out how to maximize capacity. But it is it's definitely a component of what factors into the numbers.

00:43:23:15 - 00:43:34:07
James Petrosky
So you answered it in a way that at least I'm expressing happiness and that we're not going to curb the curb our, our forward movement.

00:43:34:09 - 00:43:35:13
Sean McDonald
Definitely not.

00:43:35:15 – 00:43:57:12
James Petrosky
Well, we're sort of out of time. I apologize to our audience for the earlier technical difficulties...

© 2025 National Institute for Deterrence Studies. All rights reserved.

Although, again, I will turn it back to Kimberly, but I want to openly and publicly thank Sean for all the work he's done. Don, also, I want to thank you for stepping in when we had these difficulties. It's great to have great people around you to sort of cover when things happen. And, as always, Sean, I think we're going to have you back when we can and, work that out? And, Peter Huessy, you are just such a delight because you bring people in that are of value and come up with these great ideas.

00:44:15:07 - 00:44:24:03
Speaker 4
And so, without further ado, I'm attorney over to Kimberly to close out here. So we stick to our time as we've promised our audience, Kimberly.
00:44:24:04 – 00:44:50:04
Kimberly Cherington
I just want to thank Mr. McDonald. Thank you so much for your insights today. We really appreciate your time and your efforts. If you're new to NIDS, we're a 501 C3 nonprofit, dependent on your generous donations and our sponsors donations. We're dedicated to advancing peace and stability through a strong national security and nuclear deterrent.

00:44:50:06 - 00:45:12:01
Kimberly Cherington
Thank you for being part of our growing community. Be sure to follow us on LinkedIn and share our content with your network, to help us spread the word. You can read Peter's weekly report on our website at Thinkdeterrence.com on our homepage. And if you go to Huessy's corner there,

00:45:12:02 - 00:45:13:08
Kimberly Cherington
Have a good day.

00:45:13:09 – 00:45:14:02
Sean McDonald
Thank you all.

Events@Thinkdeterrence.com
© 2025 National Institute for Deterrence Studies. All rights reserved.