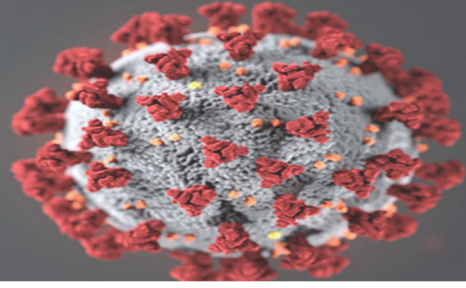


*Office of Nuclear Material Safety and
Safeguards*

**COVID-19 Public Health Emergency
Oversight Activities Assessment**



COVID-19
Public Health Emergency
Oversight Activities Assessment
– Phase B Report –

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COVID-19 Public Health Emergency Oversight Activities Assessment – Phase B

I. Approach

The Office of Nuclear Material Safety and Safeguards (NMSS) has taken a phased approach for its Coronavirus Disease of 2019 (COVID-19) Public Health Emergency (PHE) Oversight Activities Assessment effort. Phase A of this effort consisted of a short-term evaluation of feedback received through a survey of U.S. Nuclear Regulatory Commission (NRC) staff with responsibility for implementing the oversight programs in the Nuclear Materials and Waste Safety Programs, and through numerous engagements discussing implementation of the oversight programs among the leadership team and staff. The Phase A report is available in the Agencywide Documents Access Management System (ADAMS) with Accession Number ML21158A231.

Phase B is a more comprehensive evaluation by a working group with specialized inspection and programmatic experience and representation from each of the NMSS business lines (BLs) and regional offices. The ultimate objective is to provide recommendations on potential enhancements to the inspection programs based on what has been experienced and learned during the COVID-19 PHE so that we can continue to effectively implement the oversight programs and position them for success in the future.

II. Purpose

This report documents the results of Phase B of NMSS' *COVID-19 Public Health Emergency Oversight Activities Assessment*. The Phase B charter objectives were as follows:

To evaluate the various practices, adjustments, processes, and inspection techniques utilized to implement the nuclear materials and waste oversight programs during the COVID-19 PHE and develop recommendations to:

- Enhance the implementation of these programs during the current, ongoing COVID-19 PHE
- Ensure inspection programs are adequately prepared for future PHEs
- Utilize experiences during COVID-19 to enhance any aspects of the current framework for the oversight programs (e.g., inspection planning practices, guidance, communications) to ensure we continue to implement comprehensive, consistent, resilient, and modern oversight programs into the future.

More specifically, the working group was tasked to:

- Design and deploy various feedback mechanisms (e.g., interviews, surveys) that will build upon the feedback received during Phase A of this effort to assist in their evaluation. The feedback sources should be diverse, including input from all regions, and programs, various staff grade levels, the different roles in the oversight programs, and expertise, and include external stakeholders' feedback (e.g., licensees, public) to include Agreement States.
- Gather and document the various practices, processes, inspection techniques, communications, and adjustments implemented by each program (Nuclear Materials Users, Spent Fuel, and Transportation, Fuel Cycle Facilities, Uranium Recovery and Decommissioning) during the COVID-19 PHE and assess their effectiveness, efficiency, and consistency. This includes evaluating virtual or remote inspection practices and techniques.
- Identify what inspection areas in each program are most suitable for remote inspection from this point forward.
- Determine what modifications made to the program during COVID should be adopted to further evolve these programs to be more current, modern, flexible, robust, and consistent across BLs.
- Document any additional best practices and challenges from the implementation of the oversight programs encountered during the COVID-19 PHE.

III. Phase B Feedback Mechanisms

Phase B implemented a variety of feedback mechanisms that built upon those utilized in Phase A. The following were utilized to obtain internal and external feedback.

- Surveys - The initial step in the assessment was to create a survey that expanded on the information that was implemented during Phase A of the assessment. The survey consisted of 16 questions and was distributed to NMSS and regional inspectors and supporting personnel. The survey was open for responses from May 6, 2021, to June 2, 2021. Responses were received from 53 NMSS and regional representatives. Survey questions are included in Appendix A of this report.
- Interviews - Based on the input gleaned from the survey results, a series of interview questions were developed to gain a more in-depth understanding of the responses received in the survey and to obtain the necessary information to fulfill the objectives for this effort. Separate surveys were developed for inspectors, branch chiefs, division directors, and regional administrators. Interviews were conducted between July 1, 2021 and August 4, 2021. Interviews were conducted with 51 inspectors, eight branch chiefs, nine division directors, and six office/regional administrators. Interview questions for each group are included in Appendix B of this report.
- Public meetings - To gather input from the regulated community, industry groups, Agreement States, members of the public, and other interested external stakeholders, two public meetings were held. The first public meeting occurred on July 26, 2021, and the second on August 3, 2021. A summary of these public meetings is available at ADAMS

Accession No. ML21277A349. In summary, external stakeholders (1) were appreciative of the communication and coordination efforts by the staff to conduct inspections during the pandemic, (2) regarded the use of electronic reading rooms, remote exit meetings, and virtual interviews as very effective and expressed the view that they should continue to be leveraged, and (3) were very appreciate of the flexibility and responsiveness of the staff during the pandemic.

- Government-to-government meetings – The working group held a Government-to-Government Meeting on November 8, 2021, to obtain feedback from the Agreement States on the working group’s effort and recommendations. In addition, staff updated States on this effort at the monthly calls held with the Organization of Agreement States (OAS) and the Conference of Radiation Control Program Directors (CRCPD).

IV. Nuclear Materials and Waste Safety Programs Oversight Activities

The oversight activities in the Nuclear Materials and Waste Safety Programs include programmatic oversight and inspection activities of decommissioning facilities, uranium recovery activities, low-level waste facilities, fuel cycle facilities, spent fuel storage and transportation activities, and academic, industrial, and medical uses of nuclear materials. The vast majority of inspection activities are conducted out of the four NRC regional offices, except for the spent fuel storage and transportation cask vendor inspections that are conducted by a group of inspectors in headquarters. The Division of Fuel Management is responsible for the programmatic oversight for activities under the Fuel Facilities Business Line and the Spent Fuel and Transportation Business Line. The Division of Materials Safety, Security, State, and Tribal Programs is responsible for the programmatic oversight for activities in the Nuclear Materials Users Business Line, including the Agreement States. The Division of Decommissioning, Uranium Recovery, and Waste Programs is responsible for the programmatic oversight for activities under the Decommissioning and Low-Level Waste Business Line.

V. Summary of the Implementation of the Oversight Programs During the COVID-19 PHE

On January 31, 2020, the U.S. Department of Health and Human Services declared a PHE for the United States to aid the nation’s healthcare community in responding to COVID-19. On March 11, 2020, the COVID-19 outbreak was characterized as a pandemic by the World Health Organization. On March 20, 2020, the U.S. NRC required mandatory telework for all non-mission critical functions. In the subsequent months, each oversight program implemented by NMSS and the four regions adjusted its inspection programs as necessary to continue to exercise its oversight responsibilities given the new challenges presented by the PHE. Many adjustments to inspection schedules had to be made based upon the health and safety of the staff with a focus on maintaining reasonable assurance of adequate protection. Although many inspections were initially postponed at the time mandatory telework was in effect, the NRC was always prepared to undertake mission critical inspections, such as reactive inspections, to ensure public health and safety. In the subsequent weeks, the inspections were evaluated on a case-by-case basis by taking into consideration such factors as the necessary mode(s) of travel, travel restrictions, or limitations in place at the time, personal health concerns of available inspection personnel, and the local site conditions, and government mandates associated with the COVID-19 PHE.

Subsequently, on June 1, 2020, NMSS issued "Inspection Guidance During Transition from COVID-19 Mandatory Telework for the Nuclear Materials and Waste Safety Program" (ADAMS

Accession No. ML20143A281) and provided decision-making considerations for the conduct of inspections as the agency transitioned from mandatory telework to maximum flexibilities telework. To date, staff has conducted fully remote inspections, full onsite inspections, and hybrid inspections (with remote and focused onsite portions) to fulfill its important oversight mission.

Many licensed facilities continued operations and implemented preventive measures to minimize exposure and spread of the virus by reducing staffing onsite, mandating mask wearing, performing COVID testing, and implementing flexible staffing measures to reduce person-to-person contact. Therefore, coordination with licensees was critical to ensure inspections could be conducted successfully, having staff available to support inspections, and being aware of the preventive measures at sites.

Communications were key in ensuring openness, transparency, and consistency while adjusting the oversight activities to the COVID-19 PHE. NMSS and the regional offices held periodic town hall meetings with staff among all regions and headquarters. These meetings served as an avenue to disseminate best practices and challenges in implementing inspection programs during the COVID-19 PHE.

Most recently, on February 2021, NMSS provided additional guidance and clarification to the business line (BL) and regional management regarding the COVID-19 PHE to ensure consistency in decision-making and documentation regarding adjustments to inspections schedules, determining the manner for conducting inspections (e.g., remote vs. onsite), and reporting adjustments in inspections to appropriate headquarters BL managers.

VI. Nuclear Material Users Business Line

The Nuclear Materials Users (NMU) BL is managed and implemented by NMSS in conjunction with Region I, Region III, and Region IV. The NMU are also regulated by 39 Agreement States, all of whom continued to implement their Radiation Control Programs with similar adjustments to their respective inspection programs during the COVID-19 PHE. The NMU encompass a wide variety of medical, industrial, commercial, and academic institutions who also implemented varying responses, or adjustments to their operations in response to the COVID-19 PHE.

In response to the COVID-19 PHE, materials inspectors and license reviewers adjusted the inspection program to accommodate new practices and flexibilities to protect staff safety and the safety of the public against COVID-19, while also balancing the need to conduct effective oversight as part of the agency critical safety mission. Throughout the PHE, the staff evaluated inspections on a case-by-case basis to determine if inspections should be conducted onsite, performed remotely, deferred, or a combination thereof. The following outlines the inspection practices used in the NMU BL during the PHE.

A. Practices and Processes

1. Announcing Inspections

Inspection activities during the PHE were announced and coordinated with the licensee in advance for both onsite inspections and remote or hybrid inspections in almost all cases. Inspections in the NMU BL are usually unannounced, so this represented a change in current practice that was appropriate to ensure the wellness and safety of the inspectors and licensee personnel. This coordination aspect is even more critical when planning to conduct an inspection partially, or completely remotely, as the licensee and staff need to ensure document sharing platforms are accessible and the licensee has enough time to upload requested information. Many licensee staff were also working remotely or on limited in-person schedules necessitating early coordination even when it was determined that an inspection could be safely performed onsite.

2. Onsite Inspections

The decision to perform onsite inspection activities was determined based on the local COVID-19 conditions at the work site, the risk profile of the licensee, and regulated activities, the willingness of the individual inspector to travel, and consideration of the travel methods required to reach the licensee.

3. Remote Inspections

In fully remote inspections, all aspects of the IP were completed through remote processes including phone and video call interviews, virtual facility tours, and offsite reviews of documentation. Remote inspections always required inspections be announced as the licensee needed to be prepared and be supportive of this method of inspection.

4. Hybrid Inspections

Hybrid inspections are inspections performed with a combination of remote and onsite inspections techniques. The majority of the NMU BL inspections are completed by a single inspector within a single workday when performed at the licensee's facility. As such, hybrid inspections were not extensively utilized within the NMU BL during the COVID-19 PHE. Hybrid inspections were utilized in certain circumstances including the evaluation of large programs that would require multiple days of inspection and/or multiple inspectors to complete. In these circumstances inspectors would generally complete the portions of the inspection that were amenable to remote review prior to completing the onsite portion of the inspection to reduce the total amount of time onsite.

B. Inspection Techniques

Inspection techniques for onsite inspections remained generally unchanged during the PHE, except for additional upfront coordination made with the licensee when announcing the inspection. This upfront coordination allowed inspectors to discuss the current state of the licensee's program prior to arriving onsite allowing for better tailoring of inspection preparation, but also resulted in the loss of the surprise nature of the otherwise unannounced inspection and granted greater control of the timing of the inspection schedule to the licensee.

Remote inspection techniques did require more distinct adjustments as inspectors were required to develop detailed requests for information, coordinate scheduling of remote

interviews, coordinate sharing of licensee information including sensitive documentation, and adapt to the technological capabilities of the licensee being inspected. It was widely reported in interviews for this assessment that the process for remote inspection often stretched to a multi-week timeframe when an onsite inspection could have been completed in a single workday due to the challenges associated with licensee availability, response turnaround, and technological challenges. Inspectors noted in interviews for this assessment that scanning and uploading files and scheduling interviews with licensee staff were common challenges resulting in the protracted inspection schedule. Inspectors did not report that they were spending significantly more work hours performing direct inspection as a result of these changes, but that remote inspections were subject to frequent starts, and stops. Additional review of the number of direct inspection hours charged to licensees by program area will be required to evaluate the resource impact of remote inspections over time.

C. Adjustments

Inspectors were often required to adjust their inspection processes and efforts as they adapted to the rapidly evolving PHE. Materials inspectors are advantaged in that the inspection program already provides scheduling flexibility to adjust inspection dates during the routine implementation of the program. Prior to the PHE, scheduling inspections was not necessarily tied to specific activities occurring at the licensee site. Rather, they were scheduled close to their due date taking into consideration the flexibilities afforded by the scheduling window. Therefore, the postponement of inspections during the COVID-19 PHE when determined a remote inspection was not feasible for a specific licensee, was not a major deviation from the normal practice.

D. Communications Between Regional Offices, NMSS, and Agreement States

Communication efforts between the regional offices and NMSS were generally effective, but in the rapidly changing environment inspectors and management reported that a more efficient system for sharing information was needed. Inspectors and management were asked to report redundant information, sometimes to as many as six, or more different requesting groups, regarding the status of their inspection program. This ad-hoc process for requesting information was reported to be inefficient throughout the PHE. Therefore, in the event of a future major disruptive event to agency operations, such as a PHE, an inspection status communication tool that encompasses all business lines and is accessible to all staff should be developed. For this reason, the working group recommends the development of guidance in Inspection Manual Chapter (IMC) 2800 on implementing inspection programs during PHEs that address roles and responsibilities, communication expectations, and a streamlined process to communicate inspection information to the program office.

On June 1, 2020, NMSS issued "Inspection Guidance During Transition from COVID-19 Mandatory Telework for the Nuclear Materials and Waste Safety Program (ADAMS Accession No. ML20143A281) and provided decision-making considerations for the conduct of inspections during the PHE. Feedback was received that this guidance did meet the intended purpose, but that the issuance was not timely, causing confusion, and inconsistencies in decision-making at the start of the PHE. Also, in February 2021, NMSS provided expectations to ensure consistency in decision-making and documentation related to implementation of the inspection programs. These guidance documents continue to be used during the COVID-19 PHE and should be retained and

readjusted as needed for use in future major disruptive events to ensure timely resumption of oversight activities. Therefore, the working group recommends that the above-mentioned temporary inspection guidance be captured in the development of the recommended inspection guidance in IMC 2800 related to PHEs.

E. Agreement States

The NRC currently shares the responsibility of implementing the National Materials Program inspection program with 39 Agreement States. NMSS is responsible for establishing and maintaining effective communications and working relationships between the NRC and Agreement States. Upon the start of the PHE and mandatory telework posture back in March 2020, the agency had continuous communications, and coordination with Agreement States to ensure the orderly implementation of the National Materials Program. The agency utilized the various outreach and communication mechanisms that were in place prior to start of the PHE to leverage the effective exchange of information during the COVID-19 PHE. These include monthly calls with the OAS and the CRCPD, State and Tribal Communications and Radiation Control Program Directors Letters, the National Materials Champions' Chat, routine communications through the Regional State Agreement Officers in Region I, III, and IV, government-to-government meetings, and annual conferences.

Based on initial feedback from Agreement States, NMSS in coordination with the regions, developed frequently asked questions (FAQs) for the Agreement States, which included guidance concerning licensing, inspections, and the implementation of the Integrated Materials Performance Evaluation Program (IMPEP). These FAQs were updated as needed as time operating under the PHE extended. NMSS also shared the June 1, 2020, memorandum providing decision-making considerations to support inspection activities with the Agreement States. In June 2020, the National Materials Program (NMP) Champions hosted a chat about "Response by the NMP community to the COVID-19 Public Health Emergency," and in December 2020 another chat was hosted that was specific to inspections, "Virtual Inspections During the Public Health Emergency." These forums continue to be a valuable communication tool in which the NRC and the Agreement States representatives exchange experiences and information relevant to each other's programs.

A portion of NMSS' oversight responsibilities includes the implementation of the IMPEP to periodically evaluate the adequacy of the NRC's radiation control program and the adequacy and compatibility of Agreement States' radiation control programs. During the PHE, NMSS also modified the implementation of IMPEP in a manner similar to the modifications adopted in the implementation of the inspection programs. IMPEP reviews scheduled from March 2020 onward were either postponed, conducted remotely/virtually, hybrid, or onsite. Additional guidance was developed to ensure radiation control programs are reviewed consistently under IMPEP in areas that could be impacted by the COVID-19 PHE. As a result, NMSS issued in October 2020, Temporary Instruction (TI)-003, "Evaluating the Impacts of the COVID-19 Public Health Emergency as Part of the Integrated Materials Performance Evaluation Program (IMPEP)," to ensure that IMPEP teams recognize and consistently evaluate the potential wide-ranging impacts of the COVID-19 PHE on program performance until these impacts on the NMP are no longer seen during IMPEP reviews.

Lastly, the working group held a government-to-government meeting on November 8, 2021, to share the feedback received during this evaluation, provide an opportunity to the Agreement States to provide us feedback on the recommendations, and have discussions on the flexibilities Agreement States envision to adopt from this point forward. The working group shared the draft working group report with its proposed recommendations to support this engagement. Some State representatives shared similar experiences in implementing the inspection programs during the COVID-19 PHE and none expressed any objections or comments on the proposed recommendations.

F. Assessment of effectiveness, efficiency, and consistency

Regional offices were granted significant flexibility to develop their own, region-specific, processes and procedures for implementing the June 1, 2020 guidance for the transition to the COVID-19 PHE. With few established checks in place, this flexibility resulted in inconsistencies between regions when deciding when inspections should be conducted remotely instead of onsite, and when crediting inspections and determining the frequency of the next routine inspection.

1. Decision-Making for Onsite vs. Remote Inspections

Region II and Region III developed centralized Transition Review Panels that evaluated local COVID-19 conditions at the proposed work location applicable to all the BLs in the region. While Region II does not implement work of NMU BL, it is notable that Region II, and Region III differed in how the panels were utilized. Specifically, in Region II the onus was on the individual inspector to collect data inputs on the COVID-19 situation at the local job site, whereas Region III would utilize the panel to both assess, and evaluate the local COVID-19 conditions. Inspectors noted in interviews that the process of collecting data and submitting a written one-page assessment of local conditions was time intensive, confusing, and led to differences in how inspectors prepared their inputs.

Region I and Region IV used variations of the transition panel that included inter-management discussions, but more heavily relied on inspector evaluation of the COVID-19 conditions in conjunction with their direct management. Region IV evaluated both local COVID-19 conditions and options for completing an inspection and documented those decisions. Staff were critical in interviews that sufficient guidance was not in place to consistently develop these COVID-related considerations, and it was unclear to staff how these COVID-19 travel assessments were reviewed by management. In Region I the divisional branch chiefs would meet weekly to discuss upcoming inspections with respect to COVID-19 conditions. The branch chiefs would evaluate state and local conditions, federal data reports, and input from inspectors in making their decisions.

The regional offices communicated to inspectors that COVID-19 factors were intended to be one piece of the overall assessment as to whether an inspection should be performed onsite or remotely, and that other licensee, and inspection-specific risk factors would also be considered. Staff from all regions reported uncertainty in the consistency used in the process to evaluate COVID-19 risk factors within their regional office. Furthermore, it was reported that although the risk profile associated with the regulated activity was provided together with the COVID-19 information for the specific inspection under consideration, the site COVID-19 conditions information was viewed by the staff as the primary determining factor for

approving or disapproving travel. Objective assessment of risk has historically been particularly challenging to quantify in the NMU BL and the regions would have benefited from developing cross-regional criteria that would clarify for management the situations and risk factors that should inform when to perform an inspection onsite, when to delay an onsite inspection, and when to perform an inspection remotely.

It should be noted that COVID-19 risk is not uniform across the regional offices and there are many unique geographic factors that must inform the assessment of COVID-19 risk for each office including required travel methods to reach the inspection sites and local COVID-19 case conditions and vaccination rates. Due to these and other factors, not all the COVID-19 assessment processes could be standardized across the agency but standardizing some of the process would have resulted in a more uniform implementation of the nuclear materials oversight program across the regional offices. Specifically, the regions would have benefited from a consistency review to ensure that assessments were using consistent COVID-19 information sources, were setting uniform assessment input expectations for staff, and that the decision-making process for onsite vs. remote inspections is generally consistent in the application of COVID-19 and inspection-specific risk factors. Inspectors did report feeling that their personal risk tolerance for the COVID-19 PHE was respected, and no inspectors reported feeling pressured to perform onsite inspections during the PHE when they were not comfortable doing so which was highly appreciated in the feedback received.

2. Inspection Crediting

Regional offices were also identified through interviews as using differing criteria for determining what inspection aspects could be credited during remote inspection and for setting the next inspection frequency. Specifically, Region I was identified as starting inspections remotely but was more likely than other regions to conduct an onsite portion of the inspection to occur before the inspection could be credited as complete. Region I did not adjust the inspection frequency for inspections completed fully or partially remotely. Region III inspectors generally favored full remote inspections over hybrid inspections as an inspection would be performed fully onsite in most cases if an inspector were to travel there in-person. Region III did not adjust the inspection frequency for inspection completed fully or partially remotely. Region IV also conducted most routine inspections fully remotely but would reduce the interval for the next scheduled routine inspection under certain circumstances mainly due to the fact that a remote inspection did not always allow the inspector to perform independent radiation measurements or observe activities in progress at the licensee's facility or at temporary job sites.

It should be noted that the feedback received from interviews was provided by inspectors with direct experience within their own regional office only and further evaluation should be performed to determine the extent to which and under what conditions the regions truly differed from each other in the implementation of the materials oversight inspection program as it was not evident from the feedback received. These reported discrepancies between regions will need to be addressed to ensure the NRC consistently applies the materials oversight program during a future PHE and under normal circumstances should these flexibilities be adopted broadly.

G. Evaluation of remote inspection techniques and inspection practices

1. Unannounced vs. Announced Inspections

Nuclear materials inspectors were interviewed regarding their experiences transitioning to announced inspections in advance of both onsite and remote/hybrid inspections. Specifically, inspectors were asked to provide their thoughts on the impact of announcing materials inspections. During the PHE the staff generally agreed that announcing inspections was necessary for continued effective oversight and implementation of the inspection program during the PHE, and the practice should be continued if another similarly disruptive event was to occur in the future.

As shown in Figure 1, the majority of the 24 NMU inspection staff who responded to these survey questions (58 percent) held an overall negative view of continuing announcing inspections during the routine implementation of the inspection program. Negative responses included concerns that announced inspections impede the ability of the inspector to review the program in its routine state and that licensees may take short term actions to prepare for the inspection that may hinder inspectors' ability to assess licensee performance. Additionally, some staff were concerned with the loss of scheduling flexibility that they currently have with unannounced inspections. When inspection delays occur due to identification of complex issues that require additional time to resolve, it can be difficult to reschedule a planned inspection for later in the week if the licensee has already prepared staff schedules and activities to support the announced inspection. Although respondents may have provided a mix of both positive and negative feedback regarding announced inspections, 58 percent of respondents felt that the overall best option is to continue the normal operations practice of not announcing inspections as we exit the PHE conditions.

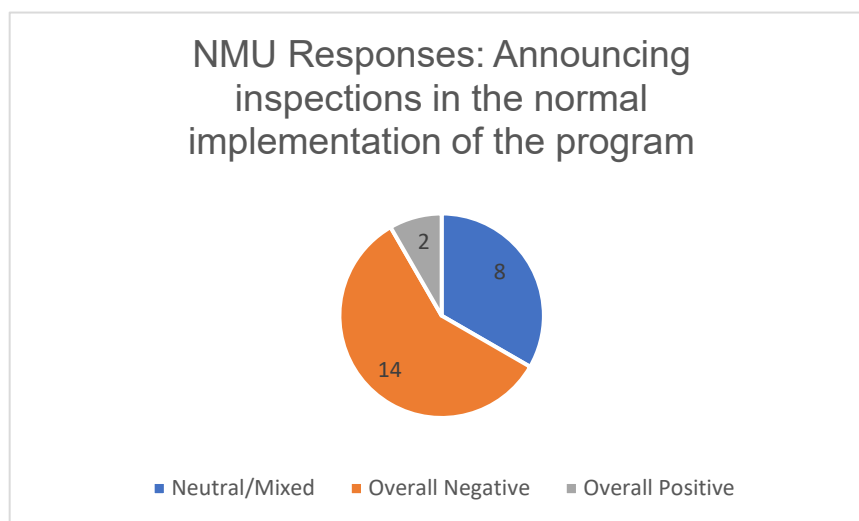


Figure 1: NMU - Announcing Inspections During Normal Implementation

Overall positive feedback was provided by 8 percent of the staff who felt that the benefits of announcing inspections were significant enough that the practice should be continued following the transition back to normal inspection activities. Advance coordination allowed for the licensees to have the right people onsite at the time of inspection and the inspector could be certain that they could see the activities they were most interested in observing when the inspection was scheduled in advance. Those providing positive feedback also noted that they do not believe that programmatic issues with a licensee are easily covered up, and violations often stem

from misunderstandings of requirements that are less likely to be caught by the licensee just because the inspection is announced. Staff included in this smaller data set may have provided both positive and negative feedback regarding announced inspections but felt that the overall best option is to announce inspections during normal operations for most NMU program areas.

The remaining 33 percent of staff provided mixed or neutral feedback regarding the use of announced inspections going forward, with some offering that strategic use may be appropriate. It was noted multiple times that licensees that perform work at temporary job sites are better candidates for unannounced inspections, but licensees that are known to work irregular hours such as certain medical clinics that are known to only perform licensed activities intermittently may be good candidates for advance coordination. Two individuals also noted both potential positives and negatives as outlined above, but do not feel that there is enough data to extrapolate to normal operations as most announced inspections they performed were also conducted remotely during the PHE.

2. Remote and Hybrid Inspections - Effectiveness and Efficiency

The NMU staff were surveyed on their experiences during the COVID-19 PHE and with the associated use of remote inspections. The survey was open for responses from May 6, 2021 through June 2, 2021, and 23 responses were received specifically from staff associated with NMU BL. Direct interviews with NMU staff and management at all levels were conducted between July 1, 2021 and August 4, 2021.

Survey and interview results with NMU staff indicated broad support for utilization of remote inspections during the PHE, or in the event of future disruptions that limit the ability of the agency to have staff travel to remote licensee facilities. Feedback from staff in the survey results indicated that opinion is divided on the utilization of remote inspections in general as part of the routine implementation of the materials inspection program. When asked if remote inspection served as a good tool to replace onsite inspections only during periods of travel restrictions, 61 percent of staff responded positively, 13 percent neutrally, and 26 percent negatively. When then surveyed to identify if inspection staff could see themselves conducting more inspections fully or partially remotely if given the opportunity during the normal implementation of the inspection program 35 percent of staff agreed, 23 percent of staff were neutral, and 43 percent of staff disagreed (see Figure 2).

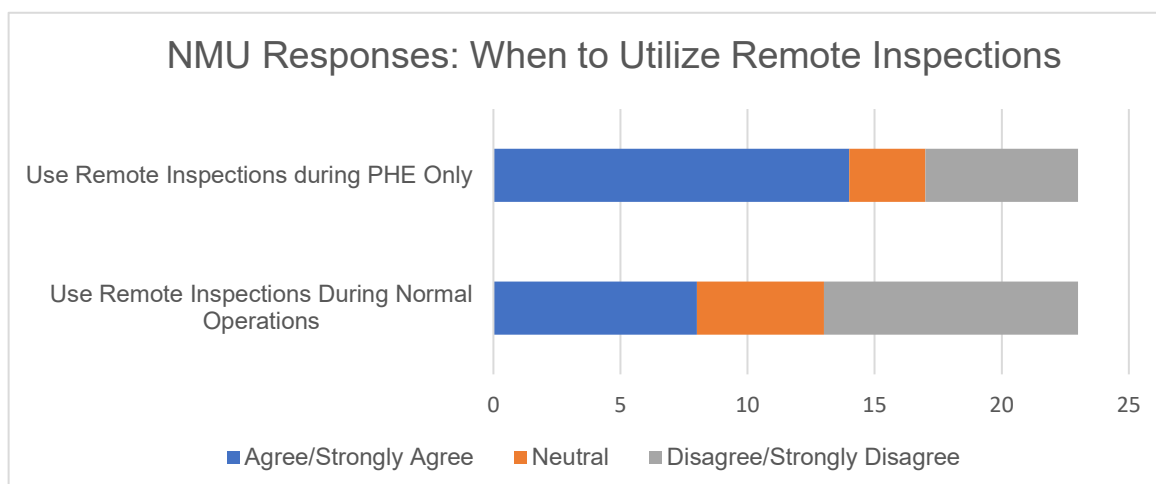


Figure 2: NMU - When to Utilize Remote Inspections

Staff were also surveyed to provide insights into the effectiveness of remote inspection when broken down into the inspection key components with results shown in Figure 3. Staff found remote review of licensee documents to be generally effective with 57 percent of staff agreeing and 30 percent of staff disagreeing when surveyed. Remote licensee meetings such as entrance and exit meetings were also found to be effective with 52 percent of staff agreeing and 17 percent of staff disagreeing. The staff also identified that observation of licensee activities and verification of licensee equipment and facility condition were very challenging to effectively perform in a remote environment with 70 percent and 74 percent of staff disagreeing respectively.

The staff provided nearly evenly mixed results on the effectiveness of performing remote interviews with licensee staff, with inspectors providing additional context to there being concerns about loss of body language signals when using remote interview methods as well as concerns about Radiation Safety Officer involvement in the interview process. The staff also provided mixed results regarding event follow-up, with 44 percent of staff providing a neutral response. Further discussions with staff during the interview process provided additional context that the range of potential materials events to respond to is quite broad and some situations may be more suitable for remote follow-up, particularly if the event, and licensee response is already well understood. Generally, support for remote follow-up trended more negatively when observation of licensee activities or verification of licensee equipment or facility condition were required as part of the event follow-up response.

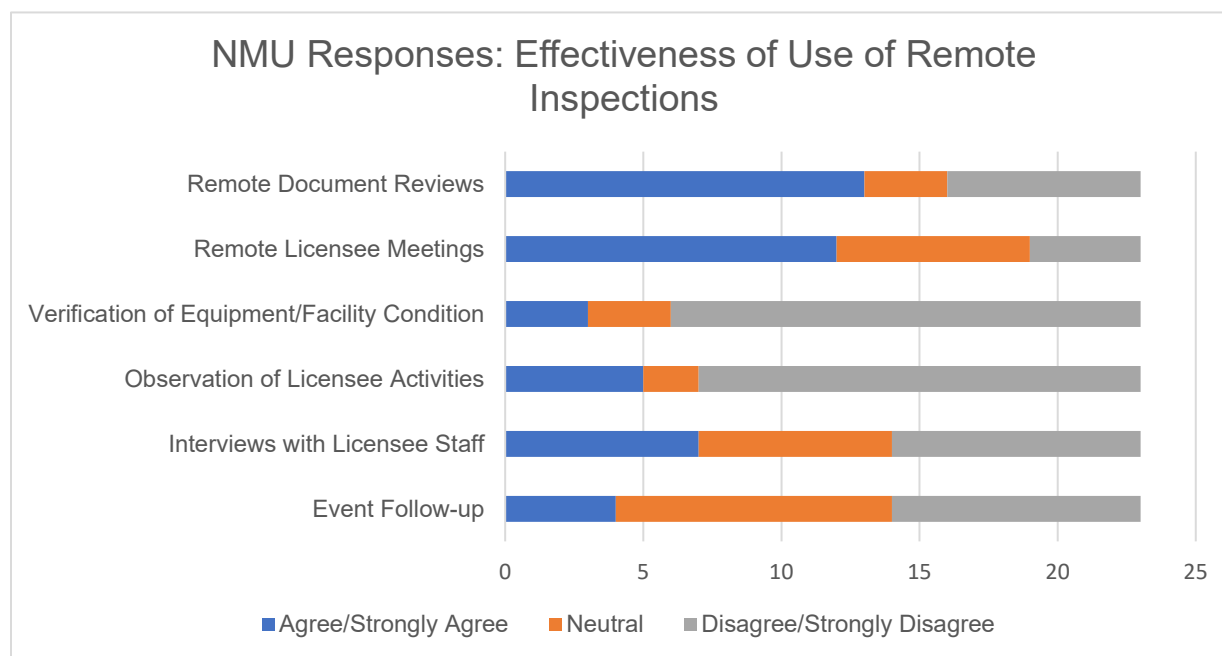


Figure 3: NMU - Effectiveness of Remote Inspections

NMU oversight staff were interviewed to provide additional, detailed clarity regarding their views on the use of remote inspection throughout the PHE and if they believe such flexibilities should be maintained as the agency transitions back to normal operations. In line with the survey responses, NMU inspectors interviewed found the use of remote inspections as part of the routine implementation of the nuclear materials oversight program to be less effective in general than the use of onsite inspection. The general feedback received from NMU inspection staff found the use

of remote inspections was more conducive to a compliance-based inspection rather than to a performance-based inspection. To further the point, after interviewing 27 NMU staff members, no inspectors provided feedback that they believed remote inspections should be routinely conducted during normal operations.

While the staff were adamantly clear that remote inspections should not be used in the majority of NMU inspections, 19 staff members, or 70 percent of those interviewed indicated that there were certain circumstances where the use of remote inspections could enhance organizational effectiveness and only two individuals interviewed expressed that remote inspections should never be used once the agency returns to normal operations. These results indicate that there is a viable place for the use of remote inspections within the NMU oversight program on a case-by-case basis to enhance organizational effectiveness following the return to normal operations.

Management, including branch chiefs, division directors, regional administrators, and office directors were interviewed to request their views on the implementation of the oversight programs during the COVID-19 PHE with respect to use of remote and hybrid inspections and what practices should or should not be continued as we return to normal operations. The working group interviewed eight branch chiefs, not all of whom are associated with the NMU BL. Five of the eight respondents expressed a desire to maintain some flexibility for remote and hybrid inspections in certain circumstances and one branch chief expressed support to use remote or hybrid inspections as a supplemental tool for certain issues such as evaluation of well understood corrective actions. The branch chiefs further expanded that they believe that the decision to perform a remote or hybrid inspection should be made at the branch chief level and that risk factors should be applied to the decision-making process. The remaining two branch chiefs did not address remote or hybrid inspections in their responses and instead focused on separate topics. No branch chiefs expressed the view that remote, or hybrid inspections should never be utilized as part of the routine inspection program during normal operations.

The working group interviewed eight division directors. Consistent with the branch chief responses, five respondents expressed a desire to maintain some flexibility for remote/hybrid inspections in certain circumstances. Division directors specifically mentioned the use of remote document reviews, applying risk factors in the decision-making process, and decision-making at the branch chief, and inspector level. One division director supported continued flexibility to use remote and hybrid inspections for inspections with the caveat that a defined strategy be developed to determine areas where use of these flexibilities is most appropriate.

The working group interviewed six Regional Administrators and/or Office Directors. In their responses three respondents expressed a desire to return to performing mostly onsite inspections and three expressed support for continued use of hybrid inspections and remote document reviews as appropriate. One respondent also felt that they could not make a broad statement either way on the issue of continued use of remote inspections as the individual details of each specific case vary greatly and must be considered on their own specific merits.

Based on the feedback received, the working group recommends that during normal operations, the majority of routine inspection activities return to being performed through direct onsite inspection. However, on a case-by-case basis, if an inspector believes that organizational efficiencies can be obtained by performing certain inspection activities remotely while maintaining its effectiveness, the inspector should

have the option to utilize remote inspection techniques when deemed appropriate by the inspector or inspection team and their management. The inspector must consider licensee performance and specific inspection activity risk to support the decision to perform the inspection activities (or portion of one) remotely. Further discussion of areas that may be appropriate candidates for remote inspection are outlined in the following section.

With regard to the use of remote or hybrid inspections during PHEs, based on the feedback received the working group recommends continuing leveraging the remote inspection techniques currently afforded to implement inspection programs while ensuring inspection staff have access to adequate personal protective equipment (PPE) and technology tools to conduct inspection activities safely and most effectively.

H. Modifications that should be adopted

1. Announcing Materials Inspections

The IMC 2800 currently requires that materials inspections be performed on an unannounced basis except for initial inspections for a new licensee, initial security inspections, inspections requiring considerable travel to remote locations including certain U.S. Territories and States, and for inspection of Master Materials Licenses. An inspector may also announce an inspection at a temporary job site or at a rig located in offshore waters if it is not possible to perform an unannounced inspection at the location of interest or if transportation to the site cannot be arranged without the assistance of the licensee.

Based on feedback from the staff, there is interest in continuing the practice of announcing inspections on a case-by-case basis under certain circumstances where announcing the inspection may result in increased organizational effectiveness. Specifically, staff indicated that inspections of licensees that only perform licensed activities on an infrequent basis, such as small medical clinics that only operate one day per week, may be appropriate to announce in advance to ensure that inspection of these facilities occur when activities are ongoing and appropriate staff are onsite to interact with the inspector. The working group recommends that the IMC 2800 working group currently working on Phase 3 of revisions to materials inspection guidance consider incorporating the increased flexibility of announcing inspections under certain limited circumstances if not already addressed in IMC 2800.

2. Remote and Hybrid Inspection

The current March 2, 2020, version of IMC 2800, allows the use of remote inspections for routine alternate locations of use of low safety significance, as the primary inspection method for Priority 5R licensees, and as appropriate for non-routine inspections related to follow-up for escalated enforcement, bankrupt, abandoned, or revoked licensees, and the option to do remote exit meetings. The IMC 2800 currently does not address the use remote or hybrid inspections for routine inspections for licensees other than 5R. Based on the feedback provided, the working group recommends that the majority of routine inspection activities return to being performed through direct onsite inspection, but remote inspection, or hybrid inspection flexibilities be permitted on a case-by-case basis and under the consideration of risk, licensee performance factors, and in coordination with

management. If it is determined that this recommendation should be implemented, the IMC 2800 working group should consider options for incorporating guidance for the utilization of these flexibilities either by revision of IMC 2800 or through the development of a supplemental appendix.

3. Evaluation and Continued Review

The utilization of remote and hybrid inspections throughout the PHE does not represent a complete data set as most NMU licensee's that were inspected through remote methods have not yet made it through their inspection cycle for the following onsite inspection. With the data that we have at this time it is very challenging to qualitatively or quantitatively evaluate the impact that use of remote and hybrid inspections has had with respect to evaluating licensee performance. As remotely inspected licensees complete their inspection cycle and are reinspected over the next 1-4 years the agency should continue to assess this practice to determine if there are any indications of declining licensee performance compared to licensees that were not subject to remote inspections. This could include reviews to identify if there is a change to the frequency of findings overall or an increased rate of violations that rise to the level of escalated enforcement attributable to licensees inspected remotely

compared to licensees that were not subject to remote inspection. The agency should also perform annual consistency reviews evaluating the use of announced onsite inspections and remote or hybrid inspections that are utilized following the return to normal operations.

While NMSS modified the Web-Based Licensing System (WBL) to indicate whether the inspection was remote versus onsite, or announced versus unannounced during the PHE, NMSS does not currently have a tool for tracking hybrid inspection techniques in WBL. Should the materials inspection program adopt these flexibilities in the normal/routine implementation of inspections or continue to use them broadly during the current and future PHEs, the agency should implement a way to track the extent to which these flexibilities are being used to be able to evaluate their impact on the program in the future. Therefore, the working group recommends updates be made to the WBL inspection module to ensure inspectors can indicate if an inspection was performed announced, unannounced, onsite, remotely, or through hybrid methods. WBL should also be modified to allow the inspector to populate the basis of the decision to conduct a remote, hybrid, or announced inspection.

VII. Fuel Facilities Business Line

The Fuel Facilities BL (FFBL) is managed by NMSS and the inspection program is implemented by the Division of Fuel Facility Inspection (DFFI) in Region II. The fuel cycle facilities inspected by DFFI are large facilities with hundreds to thousands of employees working onsite during normal operations. During the PHE, fuel facilities were considered essential, and remained in operation. Although most fuel cycle facilities maximized the number of their employees who worked remotely (e.g., licensee engineers would typically work remotely when not directly supporting activities onsite, licensing staff were sometimes entirely remote). However, some fuel cycle facilities handle classified information, and were not able to engage in remote work. Two of these facilities have an NRC resident inspector assigned.

A. Inspections Practices:

In response to the COVID PHE, DFFI performed several different types of remote, and hybrid inspections at the fuel cycle facilities they inspect. These were:

- *Fully Remote:*
In fully remote inspections, the inspectors attempted to complete all aspects of the IP solely through document reviews, phone/video call interviews, and providing questions to the licensee. Some BLs used pictures and video as part of their remote inspections during the PHE. DFFI did not use pictures or video due to concerns about Freedom of Information Act (FOIA) and sharing proprietary or sensitive information. For example, if an inspector reviewed pictures or a video walkdown as part of a remote inspection and used that as part of a basis for identifying or dispositioning a violation, it was unclear if those pictures, or videos would need to be included in an inspection report or documented in ADAMS.
- *Onsite Inspection:*
In onsite inspections during the COVID PHE the DFFI inspectors would travel to the site when they were comfortable traveling and when site and travel conditions allowed for onsite inspection. The conditions considered included number and rate of infections at the site and in the local area, the availability of PPE, and access to hotels and food. For transportation, driving alone was strongly preferred to reduce close contact with others.
- *Hybrid Inspection, with Onsite Performed Afterwards:*
This type of inspection was performed extensively by DFFI early in the PHE because of travel restrictions and site conditions that prevented onsite inspection together with the uncertainty around when or if those restrictions would be lifted. In this type of inspection, a remote inspection was first performed covering one or more IPs and/or portions of an IP. The IPs were not performed completely, instead only selected portions that had been preidentified as suitable to remote inspection were performed. If necessary, this list of areas for remote inspection was reduced if the inspection area was later determined not suitable to be performed remotely. Later, when conditions permitted, an inspector, or inspectors would conduct an onsite inspection with the scope of the inspection reduced to those areas not previously completed remotely. Notably, the onsite follow-up inspection was often performed many months later and by a different inspector.
- *Hybrid Inspection, with Onsite Performed Concurrently:*
In this type of inspection, an inspector would complete some portions of the inspection remotely at the same time other inspectors conducted an onsite inspection. Typically, only one inspector would be remote, with one, or two onsite. This allowed the onsite inspectors to follow-up with onsite inspection of issues raised during the remote inspection in real time.
- *Resident Inspections:*
Prior to the COVID-19 PHE, resident inspectors at Category I fuel cycle facilities were required to be onsite for 80 hours per pay period. When the PHE was declared, this was changed to one day per week onsite, consistent with reactor

resident inspectors. Shortly thereafter, requirements for resident inspectors at Category I fuel cycle facilities to be onsite increased to two days per week in recognition of the fact that fuel cycle facilities only have one resident at the site, unlike reactors which have a minimum of two resident inspectors.

B. Processes:

- *Transition Readiness Group (TRG) Approval Needed for Onsite Inspection:*
Region II implemented a process of requiring all inspector travel to be approved by a TRG. The TRG was composed of branch chiefs and division directors from across all BLs in Region II (i.e., Operating Reactors, New Reactors, Fuel Facilities, and License Examiners). To request authorization for travel for onsite inspections, the inspectors were required to prepare a TRG form documenting the site conditions, local area conditions, safety precautions, hospital availability, and other required information. Additionally, resident inspectors were required to prepare TRG forms to justify them going onsite on a weekly basis. The TRG would discuss these forms during a weekly TRG meeting, often with the presence of the inspector to facilitate discussions. Both, the form and the criteria for acceptable travel changed over the course of the PHE. Eventually the TRG was discontinued in early 2021.

C. Inspection Techniques:

- *Inspection Planning:*
A key aspect to enable a successful remote inspection is careful planning before the inspection. The scope of the planned inspection must be carefully considered, as not all areas of an IP can be effectively conducted remotely. Furthermore, because licensees are engaged in different activities and have different capabilities, an area of an IP that can be successfully completed at one licensee remotely may not be appropriate at another. Additionally, the area(s) of the facility selected as the inspection sample(s) (or focus area(s)) must be carefully considered since for example, safety controls might be successfully inspected remotely when the sample involves engineered controls on one process while it may not be successfully inspected remotely on an adjacent process that relies upon administrative controls.

For hybrid inspections where the onsite follow-up occurred later, inspection planning for the onsite follow-up portion required close coordination with the licensee. The inspector typically performs onsite follow-up for multiple inspection modules, so walkdowns needed to be coordinated with multiple licensee groups to ensure that they took place at different times. The onsite inspector also needed to coordinate with the remote inspectors to understand what had been inspected remotely, what needed to be inspected onsite, and how many hours for each IP had already been utilized for the remote portion of the inspection.

- *BOX and Licensee e-Rooms:*
During the PHE the fuel cycle facilities increased their use of document sharing platforms. These included the NRC hosted BOX application, as well as several different licensee-hosted platforms (referred to as e-Rooms), that NRC staff could be granted access to by the licensees. In general, these platforms allowed NRC staff access to licensee documents in the form of .docx, .pdf, .xlsx, .jpg, etc. files

that the licensees would post. These platforms enable more effective document review as a part of inspection preparation and remote inspection techniques.

D. Communications:

Communication with licensees was essential to successfully implement the fuel facilities inspection program while protecting the inspection and licensee staff from COVID-19 exposure. Routine communications between Region II, NMSS, and the licensees took place during the COVID-19 PHE to help coordinate inspections, exemption requests, and other NRC actions. Communication tools used included: Routine calls between fuel cycle facilities and NMSS and Region II staff responsible for licensing and inspections. To support inspections, detailed document requests describing documents the NRC inspectors wanted to have access via eRoom or onsite to conduct inspection activities. Inspectors also communicated with the licensee about COVID conditions at the site to determine when onsite inspection could be most favorable.

Interviewees also supported the importance of communication, focusing on communication within the NRC. One interviewee said, *“Early on we identified the need for enhanced communications with the program office and our counterparts in the regions to be able to benchmark what other programs are doing. DFM and DFFI BCs have routine communications to discuss issues, biweekly status meetings [that] we didn’t have prior to PHE to align initiatives and priorities, ensured enhanced communications between PMs, and PIs...”*

The following lists guidance issued during the COVID-19 PHE applicable to the fuel cycle inspection program.

- On April 17, 2020, NMSS issued “Implementation of Resident Inspector Coverage at Category I Fuel Facilities during Covid-19” to provide guidance on resident inspector office coverage at Category I fuel facilities during maximum teleworking for COVID-19 (ADAMS Accession No. [ML20106F226](#)).
- On June 1, 2020, NMSS issued “Inspection Guidance During Transition from COVID-19 Mandatory Telework for the Nuclear Materials and Waste Safety Programs” (ADAMS Accession No. [ML20143A281](#)).
- On February 2021, NMSS provided clarified BL expectations to ensure consistency in decision-making and documentation related to implementation of the inspection programs.
- On April 8, 2021, Region II provided COVID-19 reoccupancy guidance which described the phased reoccupancy guidance that Region II issued in accordance with the NRC COVID-19 reoccupancy Plan. This guidance applied to the resident inspectors at fuel cycle facilities.
- In August of 2021, the agency provided consistent guidance on the use of project-based telework by resident inspectors across all regions, which applies to resident inspectors at fuel cycle facilities.

E. Adjustments:

- *Delaying Inspections:*
One of the most common adjustments that was made during the COVID-19 PHE was to delay inspections until conditions permitted onsite inspection. In some cases, licensees asked NMSS for a license amendment to allow them to delay certain activities that DFFI would otherwise inspect (e.g., NRC observed emergency exercises). However, in most cases the delayed inspection was still completed within the calendar year. Where it was not, a deviation memo to NMSS was used to document what was not completed and any recommended path forward.
- *Delaying the Exit:*
Another adjustment was to delay the exit meeting, particularly for remote inspections, allowing the licensee, and inspectors more time to conduct the inspection. This helped by giving the licensee more time to find and transmit documents, answer questions, and arrange meetings, and interviews. Notably, this did not affect the number of direct inspection hours the inspector spent on the inspection since the inspector would pause inspecting when needed to give the licensee more time to respond to the inspector's requests.
- *Remote Exit/Entrance Meetings:*
In addition to doing virtual entrance and exit meetings for remote inspections, for many onsite inspections the entrance and/or exit meetings were conducted remotely to enable social distancing (e.g., using MS Teams).

F. Assessment of effectiveness, efficiency, and consistency

1. Differences among regions / Headquarters (HQ)

Because only Region II conducts fuel cycle inspections, there were no differences between regions in the conduct of these inspections. The fuel facility BL is unique among the NMSS BLs in that it has two facilities with an assigned resident inspector at the facility. These facilities also deal with a large amount of classified information. Also as mentioned above, while some BLs used pictures and video as part of their remote inspection, DFFI did not use pictures or video due to FOIA concerns and sharing proprietary or sensitive information.

2. Evaluation of virtual/remote inspection practices and techniques

- *Fully Remote:*
It was not generally possible to complete most fuel cycle IPs fully remotely, but some portions of most IPs could be completed remotely. This resulted in DFFI conducting many hybrid inspections when onsite inspection could not initially be performed, with onsite portions being conducted later. Inspections with emphasis on observing licensee activities and performing walkdowns could not be completed remotely. Likewise, inspections at facilities with strict information security controls due to handling a large amount of classified information could not be performed without overwhelming licensee resources.

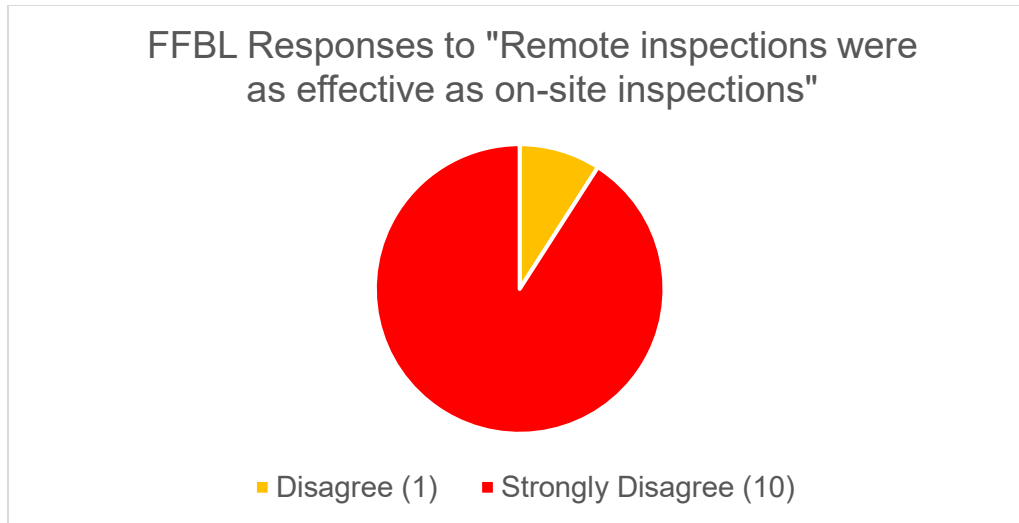


Figure 4: FFBL - Effectiveness of Remote vs. Onsite Inspections

Feedback received in the FFBL (Figure 4) showed staff disagreed remote inspection were as effective as onsite inspections. As one DFFI interviewee described it *"The key message I want to emphasize is that I didn't find remote inspection to be an equal or better substitute for face-to-face inspection."* While survey respondents stated, *"Remote inspections are an inadequate way to conduct inspections."* and *"Remote inspections should not be the norm and should be reserved for special circumstances."*

The responses were nearly as negative (Figure 5) when asked if the remote verification of equipment/facility condition and status were effective and could be continued:

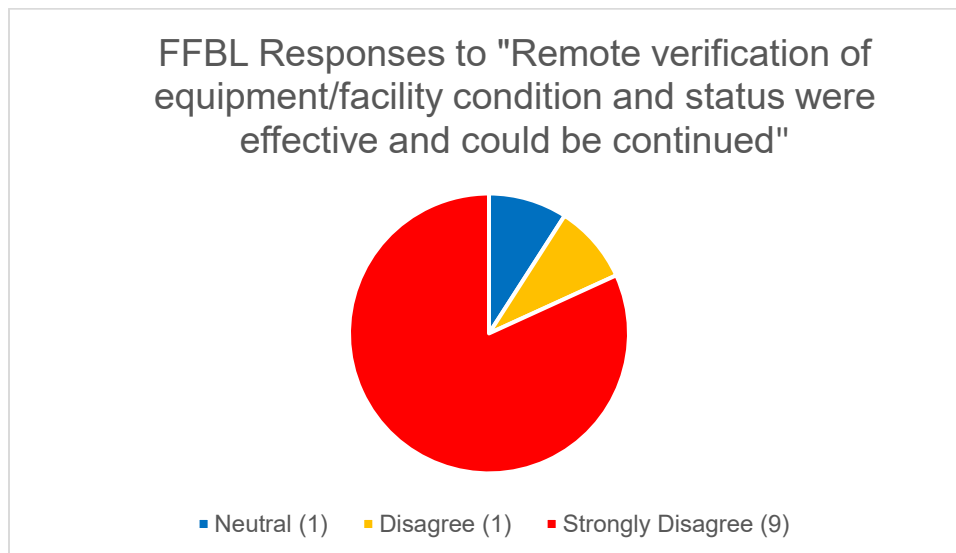


Figure 5: FFBL - Effectiveness of Remote Verification of Equipment & Facility Condition

When asked "I can see myself conducting more inspections fully or partially remotely if I am given that option during the normal implementation of my inspection program" (emphasis added), to which fuels BL personnel responded quite negatively as shown in Figure 6.

FFBL Responses to “I can see myself conducting more inspections fully or partially remotely if I am given that option during the normal implementation of my inspection program”



■ Neutral (2) ■ Disagree (3) ■ Strongly Disagree (6)

Figure 6: FFBL - Use of Remote Inspections Under Normal Conditions

- Onsite Inspection:**
 Feedback from surveys and interviews regarded onsite inspections as the most effective and most preferred approach to completing inspections. This should be the only type of inspection performed at facilities that have strict information security controls because they handle large amounts of classified information. One survey respondent stated, “I recommend on-site as the best practice for inspections.” Another said “The vast majority of inspections should be performed on-site to enable them to be completed at a better quality...”
- Hybrid Inspection, with Onsite Performed Afterwards:**
 Although this type of inspection was commonly performed in the FFBL by DFFI, feedback shows it was one of the least preferred methods of inspection. It is viewed as better than fully remote inspections, but still inferior to onsite, or remote with onsite inspection performed at the same time. When asked to respond to the statement, “The increased ability to divide inspections into pieces that are conducted at different times was effective and could be continued,” staff in the FFBL mostly disagreed as shown in Figure 7.

FFBL Responses to “The increased ability to divide inspections into pieces that are conducted at different times was effective and could be continued”

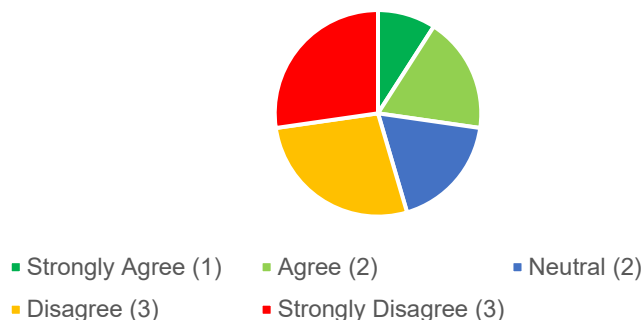


Figure 7: FFBL - Effectiveness of Dividing Inspections into Pieces to be Completed at Different Times

- Hybrid Inspection, with Onsite Performed Concurrently:**
 The survey did not directly address the effectiveness of this form of inspection. Although some respondents mentioned it during the surveys and interviews. With one respondent stating *“We could consider splitting people up on team inspections and having one person remote and one onsite. I personally don't prefer to do that, but we could allow it to be done at the team lead or branch chief's discretion.”* Another said, *“Some inspectors may prefer hybrid inspections, so giving the team lead or BC the ability to make an inspection a hybrid inspection could be good.”* One DFFI interviewee stated, *“If we do a remote inspection, it needs to be on the same week (i.e., hybrid) not the remote with onsite follow up.”*

It was also noted that licensees, even the ones supportive of remote inspections, do not like it when the inspection is split. A DFFI interviewee commenting on licensee feedback stated, *“[a Category III fuel cycle facility] advocated for more remote inspection... if the whole inspection occurred on the same week. ... If we do have a hybrid inspection, do it the same week. Don't have that three-month gap between remote and onsite. Licensees feel like they are supporting the same inspection multiple times and have to ramp up their resources multiple times instead of just once.”*

- Resident Inspections:**
 Although not addressed in a specific question by the survey, the respondents who did mention resident inspection thought that some portions could be completed remotely. Respondents said, *“there are aspects of all inspections, include resident inspection, that can be performed remotely;”* and *“some routine resident inspector document review [can be completed remotely during normal operations] ...”* While another noted that *“All core fuel facility inspections should have been permitted for onsite inspection. If facilities are determined to be essential, then regional and resident inspectors should also be considered essential...”*

- TRG Approval Needed for Onsite Inspection:

Because the TRG would not approve inspection travel until the week before the inspection, one respondent to the survey listed *“Uncertainty of travel approval until last minute”* to be the biggest challenge to support onsite inspection activities. An interviewee discussed the challenges of associated with making choices on whether or not to send inspectors onsite:

 - *“The challenge was coming up with a process for making choices on who to send where for what that was difficult. ... Which source(s) of data are we using to make choices? What are the screening criteria? What’s good or not good from a gating criteria standpoint? ... OPM memo was a good benchmark for some criteria (the gating criteria). It was good for a federal agency to make recommendations, but also it wasn’t geared toward inspections.”*

- Inspection Planning:

To get the most out of remote inspection it was necessary to plan for the inspection. Several respondents to the survey indicated the importance of planning. Saying, it is *“[i]mportant to properly plan for an inspection. Review as many documents as possible prior to conducting onsite activities.”* Other stating *“Use part of the inspection prep week to coordinate who is looking at which sections of an [inspection procedure].”*

One respondent identified *“Increased communication frequency with the facilities”* as a best practice during the PHE. Another mentioned that *“the screening of events to determine if ... inspection is needed often requires a great deal of communication with the licensee, which is similar to what would be done during a remote inspection of that event.”*

- NRC Box and Licensee e-Rooms:

When asked *“In general, how effective was the use and access to NRC provided capabilities/platforms for information sharing (e.g., Teams and Box) to conduct remote inspections?”* the FFBL respondents overwhelmingly considered these tools effective as shown in Figure 8.

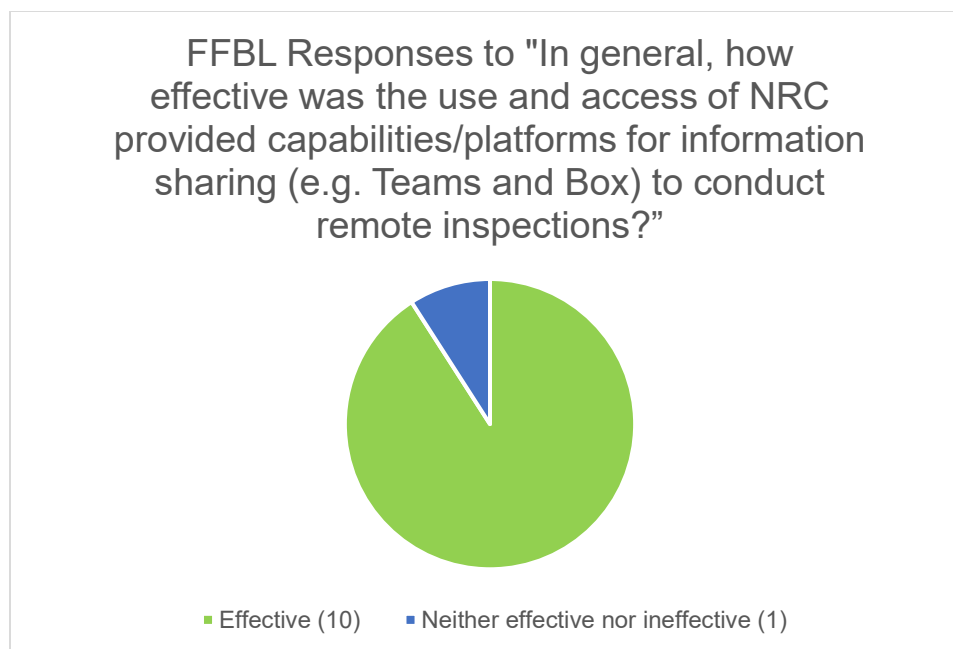


Figure 8: FFBL - Effectiveness of NRC File Sharing Capabilities During Remote Inspections

When asked "What new processes or practices adopted during the current COVID-19 PHE should be continued once we return to normal operations?" Three fuels BL respondents identified the continued use BOX/electronic reading room. One respondent wanted to only use Box, saying the NRC should "Encourage [the] use of BOX by all facilities to give inspectors a single-source location for all inspection prep rather than the patchwork of various licensee products." However, others noted limitations with the use of BOX and e-Rooms saying, "Some licensees ... found remote inspections to be overly burdensome due to working with classified matter, or the majority of their documentation is still be handled via hardcopies." Another discussed these issues when asked about licensee feedback, saying, "Some licensees ... have a robust eRoom and have little issue facilitating remote inspections. ... For some licensees it was a lot of work for them to upload lots of documents to an eRoom. ... For our Cat 1 facilities many of their documents are classified and cannot easily be reviewed remotely outside the secure room. The NRC BOX system did work well for sharing non-classified documents, but it took a lot of time and effort for them to perform classification reviews on documents before uploading them to BOX."

- Delaying Inspections:
 Survey respondents were split if rescheduling inspections was effective as shown in Figure 9. The individuals who strongly disagreed or disagreed, also indicated the program should have maintained the inspection schedule instead of changing due to the COVID-19 PHE and also supported resuming onsite inspections. Another respondent said "I understand that there was a lot of uncertainty at the beginning of the PHE and restricting travel was probably the best decision. However, as the PHE evolved and more data was available, there were still some hesitation to conduct inspections on-site when in reality there was not a significant risk to the inspectors when compared to the risk of routine daily activities." These personnel may have been more supportive of rescheduling inspections, when

doing so simply involves moving the date of an onsite inspection rather than including a remote component. The respondent who strongly agreed, specifically mentioned “[moving] an inspection in response to site conditions/activities” as a best practice during the PHE.”

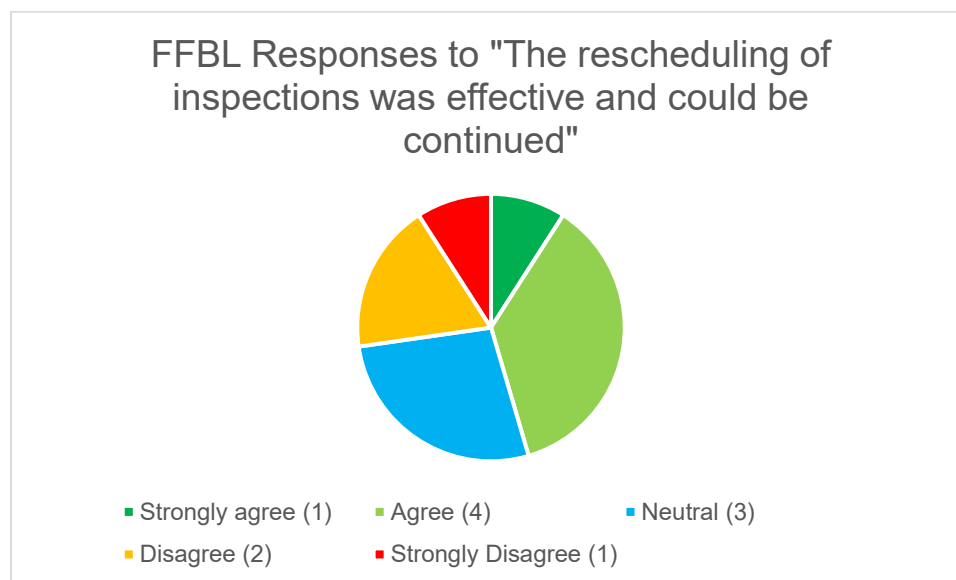


Figure 9: FFBL - Effectiveness of Rescheduling Inspections

- Delaying the Exit:**
 One respondent listed the best practice during the PHE of “*Being willing to extend the inspection to ensure all areas are covered adequately.*” And an interviewee answered generally, saying “*I see the future of oversight programs as much more flexible than ever before.*”
- Remote Exit/Entrance Meetings:**
 Remote exit meetings overlap with delaying the exit, because very often when remote exit, or entrance meetings were conducted they were conducted outside the normal time that entrance or exit meetings would be held during onsite inspections. As shown in Figure 10 most respondents in the FFBL support the continued use of holding entrance and exit meetings remotely.

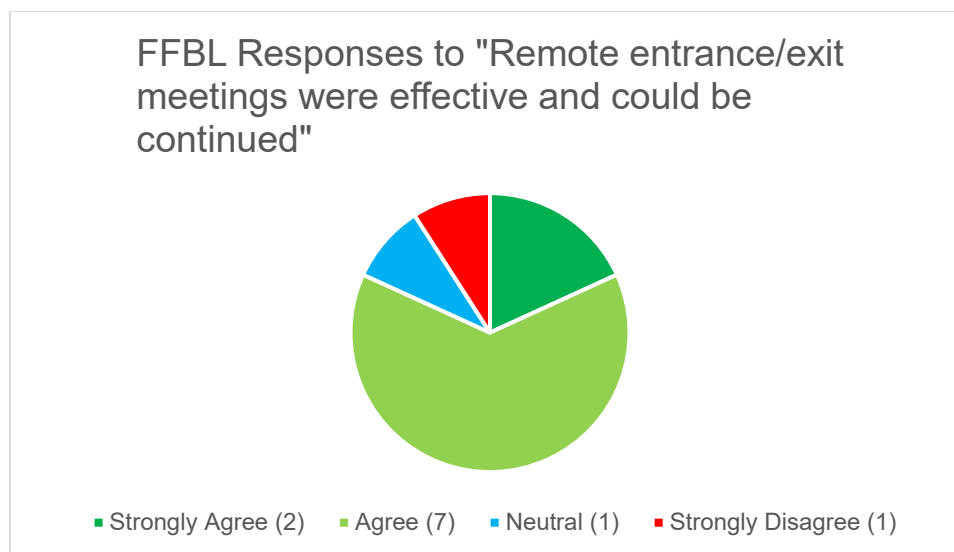


Figure 10: FFBL - Effectiveness of Remote Entrance/Exit Meetings

G. Areas most suitable for remote inspection

The inspection areas most suitable for remote inspection was directly addressed by questions in the survey. Figure 11 show responses to survey question: "To prepare for future public health emergencies, or other events which restrict the ability to perform onsite inspection, which inspection activities should the NRC have the capability and flexibility to perform remotely?"

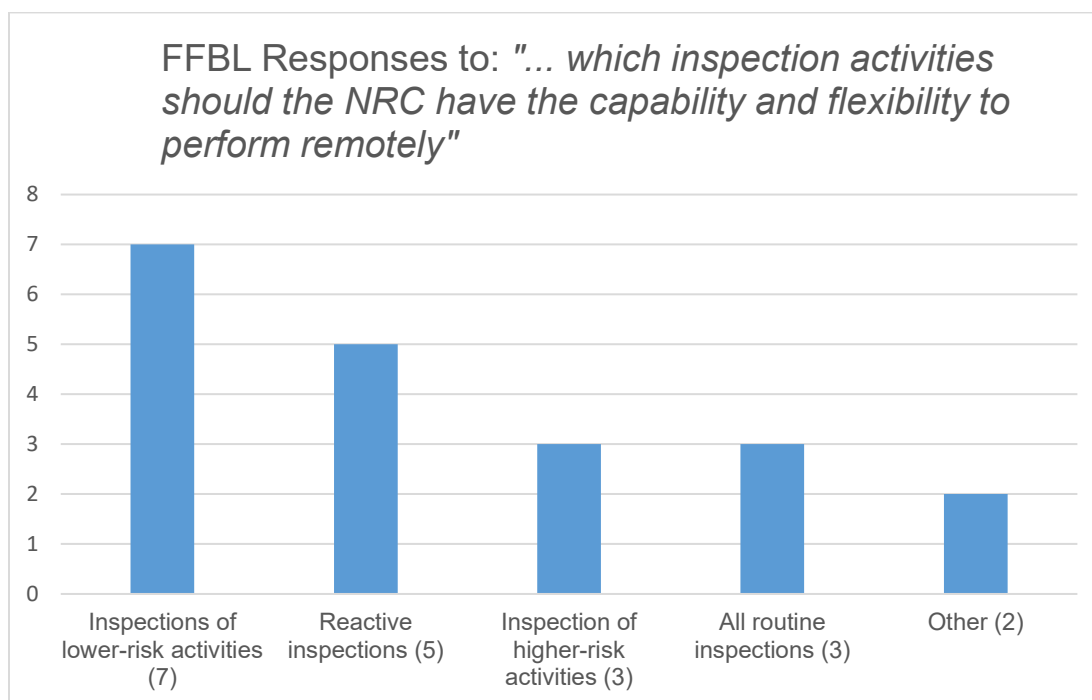


Figure 11: FFBL - Inspection Activities That Can Be Performed Remotely

When asked to provide details the survey respondents gave a range of answers:

- *“All core fuel facility inspections should have been permitted for onsite inspection.”*
- *“A risk assessment should be performed. Lower risk inspections should be postponed or performed remotely. Inspectors should go onsite for higher risk activities such [as] operations, fire protection, physical security, MC&A, and criticality safety.”*
- *“Fuel facilities can conduct remote inspections for lower risk activities such as environmental inspections and MC&A inspections.”*
- *“we should have the ability to conduct as much remote inspection as possible during things like public health emergencies (with the possible exception of things like physical security and information security which involve lots of classified material). Some inspection is better than none if we can't be onsite.”*
- *“...records review (e.g., training records, review of historical equipment/test performance data, etc.) make great candidates for remote inspection. [But] Remote review typically only reveals that the licensee believes they're implementing the program correctly. It's been very challenging to remotely ascertain whether or not they came to same conclusion we would have if we were independently observing their actions.”*
- *“training documentation reviews, corrective action reviews, and audits/assessments reviews can be conducted remotely as can reviews of procedures. Interviews can also be done remotely, but nothing more.”*
- *“Remote inspections should be further risk-informed to consider low-risk activities first while trying to conduct high risk activities on-site at a later time. If travel and access restrictions are expected to prolong, then a “best-effort” remote inspection would probably be the only option left.”*

In general, the respondents considered that onsite inspection should be performed when and where possible. When not possible due to site conditions or travel restrictions, lower risk inspection activities can be performed remotely with onsite inspection being devoted to higher-risk activities. There was no consensus on what inspections were lower risk, for example one respondent identified Material Control and Accountability (MC&A) inspections as higher-risk, while another identified MC&A as lower risk. One respondent considered that all inspections should be done onsite with none done remotely.

Another question asked in the survey that addressed this issue, was “Once normal operations resume, what inspections or portions of inspections could be performed remotely?” To which respondents provided similar answers as those discussed above. Three respondents were totally against any remote inspections. Four respondents mentioned document review, but with reservations or cautions that remote is less effective, and/or should only be used in exceptional circumstances:

- *“Document review can be performed remotely ... but document review without onsite verification is not as reliable a method to evaluate and determine compliance.”*
- *“no inspection activity should be performed remotely during normal operations. However, some special circumstances (e.g., staffing, scheduling issues) may benefit*

from conducting certain activities remotely so the program completion is not delayed. In general, anything that is programmatic in nature could be reasonably inspected remotely (Audits, training records, corrective actions, procedures, calculations, etc.)."

- *"Some limited review of paperwork (e.g., drill scenarios, environmental sampling, procedure changes), some virtual attendance at licensee meetings, and ... some routine resident inspector document review. In general, however, inspection requirements that can be completed remotely, could/should be completed better on-site with observations, walkdowns and in-person interviews rather than mere document review and phone interviews."*
- *"The only inspection I conducted that ... may make sense to conduct fully remotely is the PI&R inspection, because it is so heavily focused on document review, which is easier at home on a bigger monitor than on just the NRC laptop. Even with that though, you lose out on the ability to walk down a system/area if desired."*

Four more respondents listed areas of document review that could be conducted remotely:

- *"document reviews (assessments, corrective actions, routing audits)"*
- *"records, calculations, and procedure review could be performed remotely prior to the [onsite] inspection"*
- *"corrective actions reviews, audits/assessments reviews, training qualifications and record reviews, and organizational qualifications"*
- *"training documentation reviews, corrective action reviews, and audits/assessments reviews ... procedures"*

Inversely the survey also asked which inspections or inspection areas could not be done remotely. To which one respondent answered that no inspections could be done remotely. Two answered that only PI&R inspections could be done remotely. Two mentioned Category 1 facilities, while another said that the resident inspection IPs were not well suited for remote inspection. Specific examples given included:

- *"MC&A, INFOSEC, Physical Security, NCS, Cat I fuel facilities."*
- *"[MC&A inspections involving] item monitoring performance tests, inventory observations"*
- *"Operational implementation (e.g., observation of work activities, walkdowns, procedural adherence, etc.) should be limited to direct inspection."*
- *"plant modifications, radiation protection, fire protection, and criticality safety."*
- *"Not good for hybrid or remote inspection: plant modifications, emergency preparedness, environmental protection, emergency preparedness, exercise, and transportation. Not good for remote: all of the above plus radiation protection, criticality safety, operational safety, and fire protection."*

The differences between the lists of areas listed, is likely due to the differences in inspector experiences when conducting the same inspection at different facilities, and with different focus areas with those facilities. Likewise, the inspectors could only provide input based on the inspections they conducted, and no inspector has performed all IPs.

H. Modifications that should be adopted

The FFBL has already modified IMC 2600 to explicitly provide the flexibility for the use of remote inspection during a PHE and normal conditions. However, further work to formalize a process to decide what portions of inspections to conduct remotely during normal operations will be needed should we adopt this practice broadly. Based on the feedback received, this should involve a risk assessment of the specific inspection activities being proposed for remote inspection (i.e., specific to focus areas of the inspection, the IP being used, the specific site, and the capabilities of the licensee).

Nonetheless, consistent with recommendation in the NMU BL, the working group recommends that the majority of routine inspection activities return to being performed through direct onsite inspection, but remote inspection, or hybrid inspection flexibilities and scheduling flexibilities, be permitted on a case-by-case basis, and under the consideration of risk, licensee performance factors, and in coordination with management. Additional guidance is needed in IMC 2600 Sections 08.01 and 11.01 to include flexibilities leveraged during the PHE such as the rescheduling inspections or conducting remote entrance and exit meetings. If these flexibilities are included, the IMC should provide a structured process for rescheduling inspections. A statement that these techniques are permitted when beneficial to completing the program, and after consulting with the branch chief, and licensee, may be sufficient. IMC 2600 currently does not discuss rescheduling inspections or conducting remote entrance or exit meetings, which may unintentionally discourage these activities because they would be considered outside of procedure. Furthermore, should the FFBL inspection program adopt these flexibilities in the normal/routine implementation of inspections or continue to use them broadly during the current and future PHEs, the agency would need to implement a way to track the extent these flexibilities are being used to be able to evaluate their impact on the program in the future.

If some remote inspection techniques will continue to be leveraged in the normal implementation of the inspection program, guidance should be developed to clarify how to incorporate pictures, and/or video as part of remote inspections. Guidance could include the process for sharing and retaining (or not retaining) the pictures/video, the process to review the pictures/video to determine whether or not they are appropriate for public disclosure, and examples of what is, or isn't appropriate to request as part of a remote document request.

More specific to hybrid approach for inspections in the FFBL, the working group recommends the following.

During current COVID-19 PHE – Should the hybrid approach be leveraged to conduct inspections, it should be utilized with onsite and remote inspection occurring concurrently instead of the remote and onsite portions being conducted at different times with, different teams.

Future PHEs – The hybrid approach beginning with remote inspection with later onsite follow-up can be a tool in the toolbox if a future PHE makes it unsafe to be onsite at a licensee facility, but when the conditions support some onsite presence, hybrid inspections with both elements occurring concurrently are preferred over remote inspection with subsequent onsite follow-up.

During normal implementation of the program – Onsite inspection is the preferred method of inspection during the normal implementation of the program. The hybrid approach with concurrent onsite and remote inspection may be considered on a case-by-case basis through coordination between the inspection team and management. The hybrid approach dividing inspections into pieces that are conducted at different times should not continue in the normal implementation of the program since the feedback pointed to inefficiencies in using that approach for inspections, especially if different inspection teams, are involved at the later onsite inspection that were not involved in the initial portion of the inspection.

VIII. Decommissioning and Low-Level Waste Business Line

The Decommissioning and Low-Level Waste BL is managed by NMSS and inspections are implemented by Region I, Region III, and Region IV.

A. Practices, processes, inspection techniques, communications, and adjustments

Similar to the other BLs, the Decommissioning and Low-Level Waste BL (DLLW) inspectors adjusted aspects of the inspection program to accommodate new practices and flexibilities to protect staff safety and the safety of the public against COVID-19, while also balancing the need to conduct effective oversight as part of the agency critical safety mission.

During the PHE, DLLW conducted onsite, remote, and hybrid inspections. DLLW, in coordination between the Regions and HQ also postponed some inspections. When circumstances were unfavorable for travel and options existed to inspect remotely, inspectors pursued alternate methods of inspection, including conference calls, remote document reviews, and remote observation of activities via live videos.

DLLW inspectors traveled on a case-by-case basis considering many factors such as licensee activity, inspector willingness to travel, local site conditions, licensee's staff status and policies (e.g., licensee's availability, restrictions to onsite access, and whether their staff has covid), local restrictions and testing protocols, and branch chief approval of proposed plan. Also, the decision of whether inspections should be conducted onsite, or remotely depended on whether the inspection activities required an onsite presence.

Especially early in the PHE, onsite inspections were appropriately coordinated in advance with the licensee for onsite, remote, or hybrid inspections. This early coordination provided an opportunity for licensees to coordinate with personnel, who may have been working remotely, to be available for the inspections. For onsite inspections, inspection activities were conducted outdoors when possible. When this was not possible, inspectors minimized time onsite, maintained social distance, and used PPE.

The June 1, 2020, memorandum continues to be used to assist decision-making and the February 2021 guidance continues to be used to ensure consistency in decision-making and documentation related to implementation of the inspection programs. Feedback in the DLLW BL supported this guidance be memorialized and readjusted as needed for use in future major disruptive events to ensure timely resumption of oversight activities.

B. Assessment of effectiveness, efficiency, and consistency

1. Differences among regions / headquarters

Responses from DLLW staff indicated that there were not significant differences in the practices, processes, and inspection techniques between the regions, and HQ.

2. Evaluation of virtual / remote inspection practices and techniques

For remote inspections, inspectors attempted to complete IPs through document reviews, and staff interviews. However, not all aspects of the inspections could be completed remotely. A challenge that was reported during staff interviews of remote inspections in the DLLW BL is that most inspections conducted remotely are compliance-oriented inspections, while inspectors strive to conduct risk-informed, performance-based inspections. When interviewed, DLLW inspectors commented that performance-based inspections cannot adequately be conducted remotely.

Consistent with the other BLs, the DLLW survey responses regarding the effectiveness of remote inspection practices conducted during the PHE was mostly negative. As shown in Figure 12, of the 12 responses received to "Remote Inspections were as Effective as Onsite Inspections," 7 DLLW inspectors generally disagreed that remote inspections were as effective as onsite inspections while two remained neutral and three agreed.

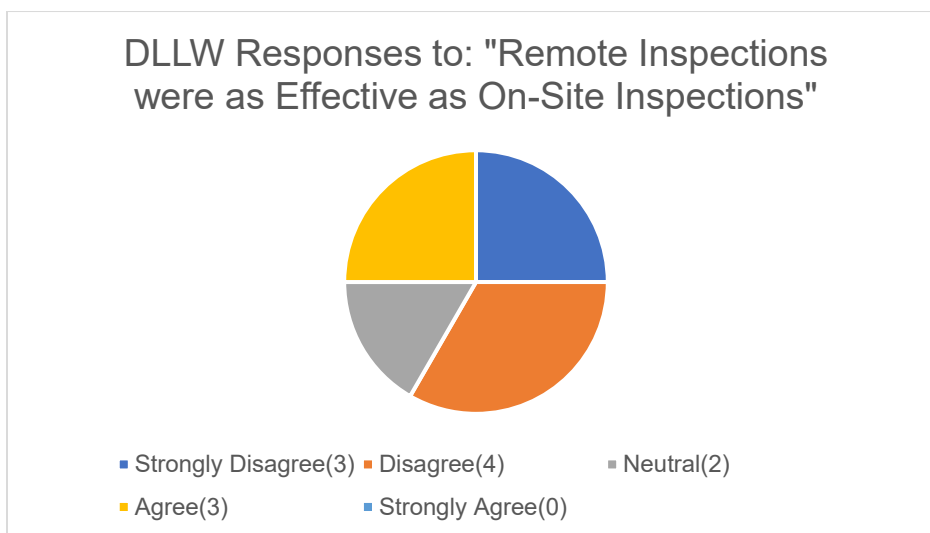


Figure 12: DLLW - Effectiveness of Remote vs. Onsite Inspections

Furthermore, as shown in Figure 13, and consistent with the other BLs, most of the respondents disagreed that the remote observation of activities was effective (compared to onsite) and could be continued in the routine implementation of the inspection program.

Several inspectors commented that additional time should be allocated for remote inspections since these tend to take longer to complete. Others commented that the entire inspection team is not always necessary for inspections with the option for remote document reviews. This could even expand the remote technical support for inspections. Lastly, one respondent indicated that inspectors should have the ability to conduct inspections remotely to be prepared for future PHE's.

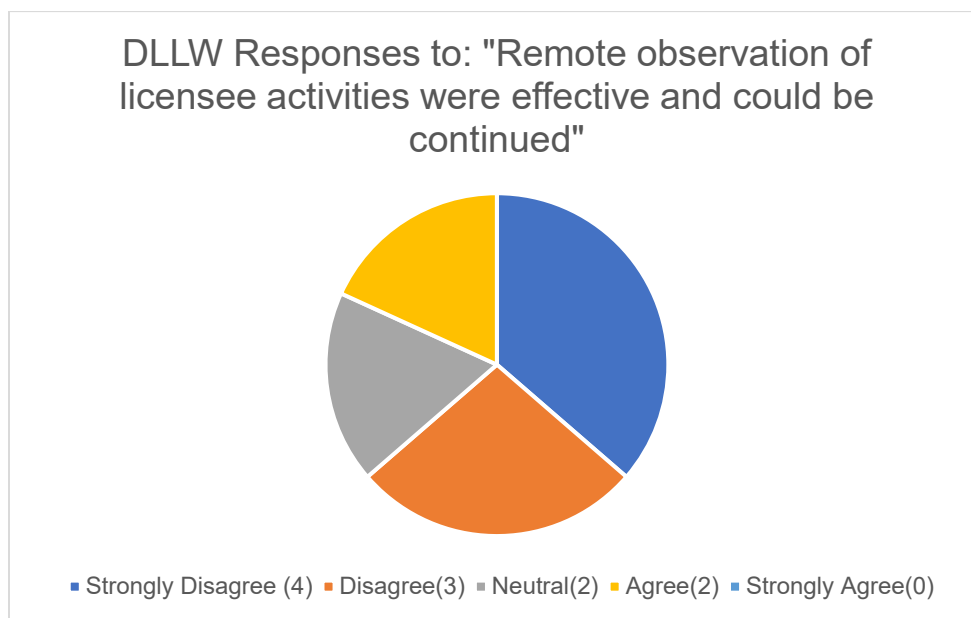


Figure 13: DLLW - Effectiveness of Remote Observation of Licensee Activities

For hybrid inspections, certain aspects of the IPs were reviewed remotely (e.g., document reviews), while other aspects were conducted onsite (e.g., walk downs, observation of operations). For hybrid inspections, the remote and onsite reviews were conducted both concurrently/in parallel and in series, with a remote document review first with onsite follow-up inspection. From the survey responses, as shown in Figure 14, DLLW inspectors had opposing views regarding whether inspections could be divided and conducted at different times, as shown below.

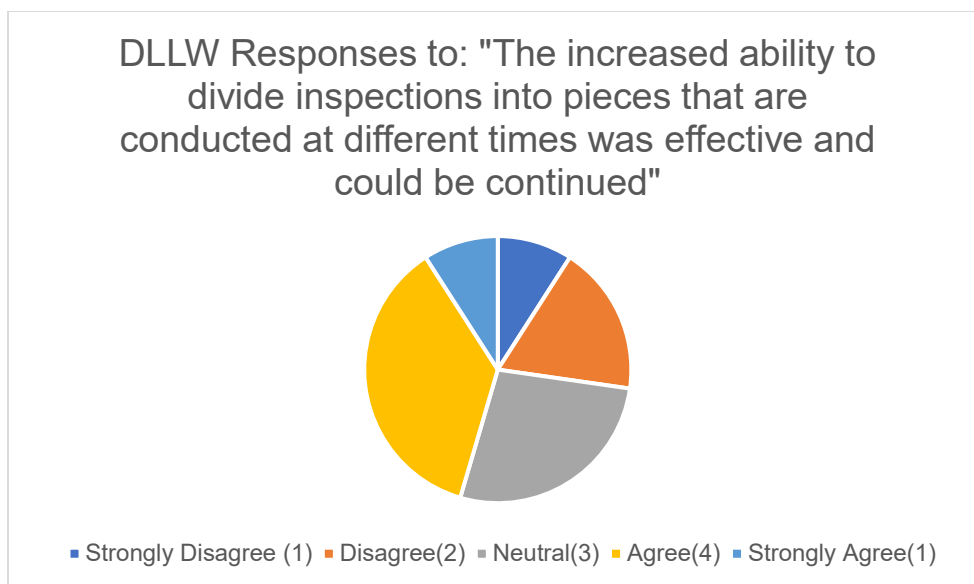


Figure 14: DLLW - Effectiveness of Dividing Inspections into Pieces to be Completed at Different Times

3. Areas Most Suitable for Remote Inspection

From the DLLW survey and interview responses, routine inspections of lower risk activities were generally identified as being most suitable for remote inspection during the routine implementation of the inspection programs. The responses lacked any further specificity into the individual IPs.

From the feedback received, remote review of documents, remote meetings and interviews with the licensee personnel were inspection aspects more amenable to remote inspection rather than observation of activities in the routine implementation of the inspection program. Additional inspection activities were discussed as being best conducted onsite, including allegations, inspection of high radiation activity areas, observation of activities, site walkdowns, outage inspections, and field radiological surveys.

4. Modifications that should be adopted

Due to the similar feedback received regarding the inspection practices during the COVID-19 PHE in the NMU and FFBL, the same recommendations made in these BLs will apply to the DLLW BL and are included below for completeness:

The working group recommends that the majority of routine inspection activities return to being performed through direct onsite inspection, but remote inspection, or hybrid inspection flexibilities and scheduling flexibilities, be permitted on a case-by-case basis, and under the consideration of risk, licensee performance factors, and in coordination with management. Should the DLLW inspection program adopt these flexibilities in the normal/routine implementation of inspections or continue to use them broadly during the current and future PHEs, the agency would need to implement a way to track the extent these flexibilities are used to be able to evaluate their impact on the program in the future.

IX. Spent Fuel and Transportation Business Line

The Spent Fuel and Transportation BL is managed by NMSS and inspections are implemented by the DFM, Region I, Region II, Region III, and Region IV.

C. Practices, processes, inspection techniques, communications, and adjustments

In response to the COVID-19 PHE, spent fuel, and transportation inspectors adjusted the inspection program to accommodate new practices and flexibilities to protect staff safety and the safety of the public against COVID-19, while also balancing the need to conduct effective oversight to meet the U.S. NRC's safety mission. Throughout the PHE, the staff evaluated inspections on a case-by-case basis to determine if inspections should be conducted onsite, remotely, or via a hybrid approach. The following outlines the inspection practices used by the spent fuel and transportation BL during the PHE:

1. Onsite Inspections

The decision to perform onsite inspection activities was determined based on inspectors' willingness to travel, travel methods required to reach the licensee, and local COVID-19 conditions. Onsite inspections were also performed to inspect high-risk activities or operations.

2. Remote Inspections

In fully remote inspections, the inspectors completed all aspects of the inspection procedure through document reviews and phone and/or video calls and demonstrations.

3. Hybrid Inspections

Hybrid inspections were used when certain risk-significant activities were occurring that either were not appropriate for video demonstration or the licensee could not accommodate the technological requests. In these circumstances, inspectors would generally complete the portions of the inspection that were amenable to remote review prior to completing the onsite portion of the inspection to reduce the total amount of time required to be onsite.

4. Inspection Techniques

Inspection techniques for onsite inspections remained generally unchanged during the PHE. Remote inspection techniques did require more coordination as inspectors needed prepare team for this approach, schedule remote interviews and demonstrations, coordinate sharing of licensee information, and in some cases adapt to the technological capabilities of the licensee being inspected.

5. Communication

Communication efforts between the regional offices and NMSS were generally effective, but in the rapidly changing environment, inspectors, and management reported that a more efficient system for sharing information was needed. As detailed in the NMU BL, setting up, a single, centralized inspection tracking system that can be accessed by all parties who require inspection status information in a future PHE will address this inefficiency in the future.

The June 1, 2020, memorandum continues to be used to assist decision-making and the February 2021 guidance continues to be used to ensure consistency in decision-making and documentation related to implementation of the inspection programs. Feedback in the SFST BL supported this guidance be memorialized and readjusted as needed for use in future major disruptive events to ensure timely resumption of oversight activities.

D. Assessment of effectiveness, efficiency, and consistency

1. Discuss differences among regions / HQ

Overall, those interviewed felt that the decision-making process for determining if inspection should be performed onsite, remotely or with a combination thereof was generally consistent across the regions.

2. Evaluation of virtual / remote inspection practices and techniques

Those interviewed felt that fully remote inspections should be reserved for extreme circumstances. Specifically, a large portion of the inspections used in the spent fuel and transportation BL requires direct onsite presence, but there are portions of the inspections that can be performed remotely. Some comments regarding remote inspections highlighted that any performance-based portion of the inspection, such as walkdowns, or direct observations, interviews to assess performance, were not as efficient, nor effective when performed remotely.

3. Areas most suitable for remote inspection

Throughout the PHE, inspectors demonstrated the ability, and willingness to maximize flexibilities in conducting remote inspections. The interviews and surveys conducted with the SFST BL showed a strong preference to have the inspections be completed onsite and only utilize remote capabilities for portions of the inspections that require document review. Document review in the SFST BL could include, but not be limited to, a review of audits, assessments, calculations, corrective action documentation, and design packages.

One area mentioned that could be performed remotely would be the stand alone Independent Spent Fuel Storage Installation (ISFSI) inspections. However, those interviewed pointed out that these inspections should not be solely completed remotely. Additionally, IP 60851 (Design Control for ISFSI Components), IP 60856 (Review of 10 CFR 72.212(b) Evaluations), and IP 86001 (Design, Fabrication, Testing, and Maintenance of Transportation Packaging) are examples of procedures that require a lot of document review and would therefore be good candidates for a remote or hybrid approach inspection.

4. Modifications that should be adopted

Inspectors and managers generally agreed that while remote inspections were able to aid the agency meet its mission during the PHE, there are aspects of spent fuel, and transportation inspections that provide more value if conducted onsite. Feedback supported the agency to retain the ability to conduct remote and hybrid inspections as necessary, such as during future pandemics, or disruptions to the inspection program. Consistent with the other BLs feedback, the SFST BL feedback supports memorializing guidance used during the COVID-19 PHE is important to be most prepared for a future PHE. It also supports adopting flexibilities, if not explicitly existing in inspection guidance, to allow remote reviews of documentation as well as

using remote inspection techniques as needed in the normal implementation of the inspection program.

Due to the similar feedback received regarding the inspection practices during the COVID-19 PHE in the other BLs, the same recommendations made in the other BLs will apply to the SFST BL and are included below for completeness:

The working group recommends that the majority of routine inspection activities return to being performed through direct onsite inspection, but remote inspection, or hybrid inspection flexibilities and scheduling flexibilities, be permitted on a case-by-case basis, and under the consideration of risk, licensee performance factors, and in coordination with management. Should the SFST BL inspection program adopt these flexibilities in the normal/routine implementation of inspections or continue to use

X. Common Best Practices and Challenges and Additional Recommendations

A. Best Practices

The report for Phase A of the COVID-19 PHE Oversight Activities Assessment (ADAMS Accession No. [ML21158A231](#)) documented initial best practices in implementing the inspection programs during the PHE. The initial best practices were:

1. Early planning and communications with licensees are needed to support inspection activities during the PHE.
2. Staff need to be flexible on inspection duration in the conduct of remote inspections.
3. For inspections that were partially conducted remotely (with planned onsite follow-up at a later date), it is very important that during or immediately after the remote inspection portion is completed, inspectors document detailed notes on exactly what needs to be inspected during the onsite portion so there is clear understanding and no duplication of effort.
4. Maximize remote review of licensee documentation

The Phase B assessment also collected and analyzed best practices from the start of the PHE up to the Summer 2021. All the best practices captured by Phase A were also highlighted as best practices during the Phase B assessment. In addition to those, the following were brought forward as best practices during the PHE:

5. Announcing materials inspections – As detailed in Section VI.A.1 (NMU) respondents identified announcing materials inspections necessary and a best practice. This allowed for appropriate coordination and awareness between the licensee and staff to make informed decisions for materials inspections.
6. Remote and hybrid inspections – Respondents indicated the use of remote or hybrid inspections was a good practice as it allowed us to exercise our oversight function while maximizing safety of people against the virus. The use of video and pictures to support inspections in addition to document review was regarded as necessary in the observation of high-risk activities when traveling was not feasible for onsite inspections.

7. Use of BOX or other platforms for document sharing – With greater use of remote or hybrid inspections, the use of document sharing platforms such as BOX was highlighted as a best practice since it is available to all NRC staff and accessible by licensees to share large amount of documents to support inspection activities.
8. Request records in advance for remote, hybrid, and onsite inspections – Prior to the PHE, this practice varied by BLs since, for example, NMU BL mostly conducted unannounced inspections, records were requested onsite rather than prior to the inspection. However, respondents indicated across BLs that the requesting records in advance was a best practice to facilitate inspection activities. This does not only apply to remote and hybrid inspections but also for onsite inspection as it allowed inspectors to minimize time or close contact with others while onsite.
9. Conduct interviews remotely during remote, hybrid, and onsite inspections – Respondents identified as a best practice to avoid close contact among people to conduct interviews in support of inspections remotely or virtually through phone calls or Teams even while onsite.
10. Onsite inspections – Some respondents expressed that conducting onsite inspection was a best practice during the COVID-19 PHE. As detailed in this report, despite limitations in travel the agency used a risk-informed approach to decide whether to delay an inspection or to perform an inspection onsite, fully remotely, or partly remotely (hybrid). Therefore, onsite inspections were conducted successfully when deemed necessary (e.g., high-risk activity, security-related, reactive inspection) to obtain reasonable assurance of safety.

B. Challenges

The report for Phase A of the COVID-19 PHE Oversight Activities Assessment (ADAMS Accession No. ML21158A231) documented initial challenges in implementing the inspection programs during the PHE which are explained in that report. The initial challenges were:

1. No access to printers and electronic review of documents
2. Document sharing
3. Gaining access to licensee IT systems
4. Getting tested for COVID-19 in support of inspection activities
5. Social distance and facial coverings
6. Travel-related limitations and challenges
7. Conducting remote inspections

The Phase B assessment also collected and analyzed challenges from the start of the PHE up to the Summer 2021. Some challenges captured by Phase A were also brought up as common challenges during the Phase B assessment. The following are additional common challenges brought forward during Phase B:

8. Remote inspection success is largely dependent of licensee’s capabilities and cooperation – respondents shared that conducting remote inspections successfully depends on the full and timely cooperation or response of the licensee being inspected. This challenge is not necessarily a willingness (from the part of the licensee) issue but sometimes a technological capability issue (e.g., does the licensee have the tools and resources to support a remote inspection?). This is something that cannot be easily predicted before you choose the remote method for an inspection and therefore difficult to consider in the decision to perform an inspection remotely.
9. Information technology tools to support inspections – Respondents shared that to successfully conduct remote inspections, they often had to assist licensees on the use of information technology tools to support the inspections which in turn takes more time to figure out the best way or tool to complete a remote inspection. Licensee’s knowledge/familiarity with information technology tools to support remote inspection techniques and connectivity reliability varied greatly which in turn made remote inspections takes longer. Some licensees have primarily electronic records and others have primarily paper records. It is more burdensome and time consuming to share large paper records in support of an inspection. Additionally, for the licensees whose processes utilize classified information, documents also had to undergo a derivative classification review before being uploaded to an eRoom.
10. Remote and hybrid inspections – While this is also identified as a best practice, as discussed in detail in this report, support to remote, and hybrid inspection methods varied greatly. Among the challenges mentioned were that it takes longer to complete the inspection as it involves additional coordination, it involves many starts, and stops to inspection activities, managing competing priorities as routine office work continues, and remote interviews not conducive to spontaneous conversations, and ad-hoc demonstrations. Also, the inability to assess licensee performance by observing highest risk areas or activities and conducting independent surveys that are better suited to be done onsite, according to these respondents.
11. Approval for travel – Respondents shared that the uncertainty for travel approval was a big challenge as it impacts inspection planning. Preparation for a remote inspection versus an onsite inspection varies and not knowing until the week before or sometime days before the scheduled inspection made it extra challenging. While challenging, it was also understood that the reasons for making decisions close to the inspection start date was necessary to make the most risk-informed decision considering the volatile COVID-19 spread.

C. Additional Recommendations

Based on the feedback collected and analyzed, the working group identified the following recommendations that apply to all the BLs in NMSS:

During normal implementation of the program – Continue to allow flexibility to reschedule and move inspections to best accomplish the purpose of the inspection (e.g., better licensee support, reduce licensee/inspector burden, ensure specific activities are occurring onsite, etc.).

For future PHEs – Feedback received indicated unclear guidance from the agency made it difficult in the beginning of the PHE to understand the information needed and to be considered to determine to travel to conduct an inspection or to decide to do it remotely

or with a hybrid approach. Therefore, the working group recommends a centralized team, task force, or working group (like the COVID task force but specific for inspection activities or for travel) should be established as soon as possible to establish the decision-making criteria and process to be used by the programs to support decision-making for inspection activities. This will help achieve consistency across the inspection programs and assist in establishing and enforcing processes to ensure the safety of the inspectors and their families (e.g., process if exposed during inspection, testing).

For current and future PHEs – The working group recommends that the Inspection Manual Chapters under NMSS develop guidance similar to that included in Appendixes to IMC 2600 and 2690 for implementing inspection program during PHEs. Other programs such as materials, decommissioning, and uranium recovery, do not currently include guidance on implementing the program during PHEs and should create similar and consistent guidance for their programs. The guidance should address roles and responsibilities, communication expectations, and a streamlined process to communicate inspection information to the program office. This guidance should also memorialize or reference the practices and interim guidance issues during the COVID-19 PHE.

Those programs that already have PHE-related guidance, the fuel cycle inspection program, and the spent fuel inspection program, should update this guidance as needed based on additional learnings from the COVID-19 PHE since they were issued, and to include interim guidance issued during this period.

For current and future PHEs and normal implementation of the program – Continue to promote, support, and maintain information technology tools to facilitate remote inspection techniques using file sharing tools such as BOX to better enable file sharing with licensees who do not have their own e-rooms. Use video conferencing and other video platforms to support remote/distant interviews, remote observation of activities, document review, or additional technical support for inspections.

Feedback showed that inspectors relied more on personal mobile devices to support remote inspection and some were uncomfortable with this practice. The working group discussed that this could be addressed with additional guidance or training on the tools and devices available to support remote and/or virtual inspection activities that do not rely on the use of personal mobile devices.

XI. Summary of Recommendations

	Recommendations	Business Line Applicability
1	<p><i>With regard to the use of remote or hybrid inspection techniques in the normal implementation of the program</i></p> <p>Based on the feedback received, the working group recommends that during normal operations, or routine implementation of the inspection program, the majority of routine inspection activities return to being performed through direct onsite inspection. However, on a case-by-case basis, if an inspector believes that organizational efficiencies can be obtained by performing certain inspection activities remotely while maintaining its effectiveness, the inspector should have the option to utilize remote inspection techniques when deemed appropriate by the inspector or inspection team and their management. The inspector must consider licensee performance and specific inspection activity risk to support the decision to perform the inspection activities (or portion of one) remotely.</p> <p>Should the BLs adopt these flexibilities in the normal/routine implementation of inspections or continue to use them broadly during the current and future PHEs, the agency should implement a way to track the extent these flexibilities are being used to be able to evaluate its impact on the program in the future.</p> <p>For example, in NMU, the working group recommends updates are made to WBL inspection module to ensure there is a way for inspectors to indicate if an inspection was performed with a hybrid approach, onsite, remotely, or announced. WBL should also be modified to allow the inspector to populate the basis of the decision to conduct a remote, hybrid, announced, or unannounced inspection.</p>	NMU FF DLLW SFST
2	<p><i>With regard to the use of remote or hybrid inspections during the current and future PHEs</i></p> <p>Based on the feedback received, the working group recommends continuing leveraging remote inspection techniques currently in place to implement inspection programs while ensuring inspection staff have access to adequate PPE and technology tools needed to conduct inspection activities safely and effectively.</p>	NMU FF DLLW SFST
3	<p><i>With regard to the practice of announcing inspections in NMU BL</i></p> <p>a. <u>During normal implementation of the program</u> – The general practice of announcing remote materials inspections in advance should occur only in certain circumstances (case-by-case) where the inspector and BC determine it would improve organizational effectiveness or efficiency (ex. a licensee in a remote area where we know they only do licensed activities on an infrequent basis).</p> <p>b. <u>During current and future PHEs</u> – The practice of announcing materials inspection to support inspection activities during the PHE was important to ensure the safety of inspectors and licensee staff and should continue in the current and future PHEs.</p>	NMU
4	<p><i>With regard to the hybrid approach for inspections in the FFBL</i></p>	FF

	<p>a. <u>During current COVID-19 PHE</u> – Should the hybrid approach be leveraged to conduct inspections, it should be utilized with onsite and remote inspection occurring concurrently instead of the remote and onsite portions being conducted at different times with, different teams.</p> <p>b. <u>Future PHEs</u> – The hybrid approach beginning with remote inspection with later onsite follow-up can be a tool in the toolbox if a future PHE makes it unsafe to be onsite at a licensee facility, but when the conditions support some onsite presence, hybrid inspections with both elements occurring concurrently are preferred over remote inspection with subsequent onsite follow-up.</p> <p>c. <u>During normal implementation of the program</u> – The hybrid approach dividing inspections into pieces that are conducted at different times should not continue in the normal implementation of the program since the feedback pointed to inefficiencies in using that approach for inspections, especially if different inspection teams are involved at the later onsite inspection that were not involved in the initial portion of the inspection. In general, onsite inspection is the preferred method of inspection during the normal implementation of the program. The hybrid approach with concurrent onsite and remote inspection may be considered on a case-by-case basis through coordination between the inspection team and management.</p>	
5	<p><i>With regard to flexibilities in scheduling of inspections</i></p> <p><u>During normal implementation of the program</u> – Continue to allow flexibility to reschedule and move inspections to best accomplish the purpose of the inspection’s various needs (e.g. better licensee support, reduce licensee/inspector burden, ensure specific activities are occurring onsite etc.).</p>	NMU FF DLLW SFST
6	<p><i>With regard to information to assist decision-making</i></p> <p><u>For future PHEs</u> – Feedback received indicated the unclear guidance provided by the agency made it difficult in the beginning of the PHE to understand the information needed and to be considered when determining whether to travel to conduct an inspection, perform the inspection remotely or perform the inspection utilizing a hybrid approach. Therefore, the working group recommends a centralized team, task force, or working group (like the COVID task force but specific for inspection activities or for travel) should be established as soon as possible to establish the decision-making criteria and process to be used by the programs to support decision-making for inspection activities. This will help achieve consistency across the inspection programs and assist in establishing and enforcing processes to ensure the safety of the inspectors and their families (e.g., process if exposed during inspection, testing).</p>	NMU FF DLLW SFST
7	<p><i>With regard to guidance for pandemics or PHEs</i></p> <p><u>For current and future PHEs</u> – The working group recommends that the Inspection Manual Chapters under NMSS develops guidance similar to that included in Appendixes to IMC 2600 and 2690 for implementing inspection program during PHEs. Other programs such as materials, decommissioning, and UR, do not currently include guidance on implementing program during PHEs, and should create similar and consistent guidance for their programs. The guidance should address roles and responsibilities, communication expectations, and a streamlined process to communicate inspection information</p>	NMU FF DLLW SFST

	<p>to the program office. This guidance should also memorialize or reference the practices and interim guidance issues during the COVID-19 PHE.</p> <p>Those programs that already have PHE-related guidance, the fuel cycle inspection program, and the spent fuel inspection program, should update this guidance as needed based on additional learnings from the COVID-19 PHE since they were issued, and to include interim guidance issued during this period.</p>	
8	<p><i>With regard to information technology tools</i></p> <p><u>For current and future PHEs and normal implementation of the program</u> – Continue to promote, support, and maintain information technology tools to facilitate remote inspection techniques using file sharing tools such as BOX to better enable file sharing with licensees who do not have their own e-rooms. Use video teleconferencing and other video platforms to support remote/distant interviews, remote observation of activities, document review, or additional technical support for inspections.</p>	<p>NMU FF DLLW SFST</p>

Alternate views

It is worth noting that not all working group recommendations were unanimously supported. One working group member was not supportive of some of the recommendations included in this report. The working group member's proposed staff interview questions were not included in the final version (Appendix B). As a result, that working group member felt there was lack of transparency in not including its proposed staff interview questions and felt the existing questions in the staff interviews were leading questions to a specific outcome. The working group member believed that: (1) each business line should have been assessed separately in order to be responsive to the specific challenges associated with that inspection program; (2) the recommendations did not fully consider the distinct needs and challenges of each inspection program and therefore lack specificity; and (3) the adjustments implemented during the PHE lacked change management oversight and effective feedback mechanisms for the staff.

The working group considered all the questions suggested by working group members and discussed them during working group meetings. The working group ultimately decided on the staff interview questions provided in Appendix B of this report since they applied to personnel in all business lines, and they were identified to supplement feedback received during the survey and aligned with meeting the objectives of the working group charter. The working group discussed the alternate views prior to finalizing its recommendations. The rest of the working group members continue to be supportive of all the recommendations provided in this report despite the alternate views discussed above.

XII. Conclusion

The working group found that, despite the challenges presented by the COVID-19 PHE, the NMSS oversight programs remained effective in accomplishing its important oversight mission since the agency implemented mandatory telework in March 2020. The staff continues to demonstrate creativity, innovation, flexibility, and resiliency to best accomplish the objectives of the inspection programs. The working group believes implementing the recommendations stemming from this assessment would enhance the implementation of these programs during the current, ongoing COVID-19 PHE, any future pandemic or PHE, and enhance aspects of the current framework for the oversight programs based on what we experienced in recent months.

Appendix A - Survey Questions



COVID-19 PHE - Oversight Activities Assessment Survey

The purpose of this anonymous and voluntary survey is to get feedback related to the oversight activities associated with the Nuclear Materials and Waste Safety Programs (NMWSP) during the COVID-19 PHE and its associated mandatory/maximum telework period.

We want to learn about your personal experiences, best practices, and challenges encountered while implementing the oversight programs associated with the Nuclear Materials and Waste Safety Programs being implemented during the COVID-19 PHE.

The survey results will be assessed to evaluate the various practices, adjustments, processes, and different inspection techniques that have been used to carry out our important oversight function associated with the Nuclear Materials and Waste Safety Programs.

The results will be further evaluated for the development of recommendations to enhance inspection-related and programmatic guidance for the current COVID-19 or future PHEs. The results may also be used to inform recommendations to enable NMSS activities to become more agile, resilient, and efficient both during future PHEs, and when operating under normal circumstances.

The survey will remain open through May 26, 2021. Once you submit the survey, you cannot alter your responses. However, there will be an additional opportunity to provide feedback at a later time.

1. Identify any best practices you identified during the conduct of inspections (remote, onsite, and hybrid) and/or related oversight functions during the COVID-19 PHE.
2. What were the challenges you faced while performing inspections (remote, onsite, and hybrid) during the COVID-19 PHE? How did you overcome or address the challenge?
3. Provide your personal lessons learned relating to your inspection activities during the COVID-19 PHE?
4. In general, how effective was the use and access of NRC provided capabilities/platforms for information sharing (e.g., Teams and Box) to conduct remote inspections?
 - Effective
 - Neither effective nor ineffective
 - Ineffective
 - No basis

5. To prepare for future PHEs, or other events which restrict the ability to perform onsite inspection, which inspection activities should the NRC have the capability, and flexibility to perform remotely?

- All routine inspections
- Inspection of higher-risk activities
- Inspections of lower risk activities
- Reactive inspections
- Pre-licensing site visits
- Initial materials inspections
- Other

6. Based on your response above to Question 5, please provide additional information on which activities or inspections you believe could have more flexibility (please specify your inspection program, i.e., materials, fuel facilities, etc.)?

7. Once normal operations resume, what inspections, or portions of inspections could be performed remotely (please specify your inspection program)?

8. Within your BL, are there particular inspection areas that you feel are NOT good candidates for hybrid or remote inspection following the return to normal inspection operations? (Please specify your program)

9. What feedback have you received from licensees or certificate holders regarding NRC conduct of remote inspections during the COVID-19 PHE?

10. Having conducted remote inspections and site visits over the last year, please provide your views on the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Remote inspections were as effective as onsite inspections					
Remote inspections served as a good tool to replace onsite inspections ONLY during periods of travel restrictions					
I can see myself conducting more inspections fully or partially remotely if I am given that option during the normal implementation of my inspection program					
Remote meetings with the licensee were effective (e.g., entrance and exit meetings) and could be continued					
Remote interviews were effective and could be continued					
Remote document reviews were effective and could be continued					
Remote observation of licensee activities was effective and could be continued					

Remote verification of equipment/facility condition and status were effective and could be continued					
Remote event follow-up was effective and could be continued					
The rescheduling of inspections was effective and could be continued					
The increased ability to divide inspections into pieces that are conducted at different times was effective and could be continued					

11. What new processes or practices adopted during the current COVID-19 PHE should be continued once we return to normal operations?

12. What processes or practices adopted during the current COVID-19 PHE should not be continued once we return to normal operations?

13. Are there practices that were put in place during the PHE that should not be continued during normal operations, but that should be 'saved' for future events which restrict onsite inspection?

14. Please provide your job type.

- Region-based inspector or license reviewer
- HQ inspector
- Resident inspector
- Supervisor/manager
- Administrative Support
- Security inspector
- Programmatic support to inspection
- Other

15. What BL(s) do your oversight program functions or inspection activities support? This is being asked to determine whether recommendations resulting from this survey should be specific to any BL.

- Nuclear Materials
- Spent Fuel Storage and Transportation
- Fuel Facilities
- Decommissioning and Low-Level Waste
- Other

16. This space is provided for any additional feedback that you would like to provide as it relates to your experience implementing the oversight program functions or inspections during the COVID-19 PHE, any feedback you have for how things should be implemented once normal inspections are resumed, and any feedback for preparing for future events that restrict onsite inspection.

Appendix B - Interview Questions

Staff Interview Questions

1. How are you feeling in your role as an inspector after nearly 1.5 years of the PHE?
2. How has your approach to inspections changed to accommodate the transition to remote inspections?
3. Can you provide an overview of the decision-making process used in your work unit for deciding if inspections will be performed remotely or onsite?
4. When deciding if inspections will be performed remotely or onsite: Are any changes needed to ensure consistency within your business line?
5. When deciding if inspections will be performed remotely or onsite: How important are licensee specific issues or concerns in this process?
6. When deciding if inspections will be performed remotely or onsite: Can a uniform approach to remote/onsite inspections be made by inspection area type, if flexibilities are still available for inspector, and management discretion?
7. When deciding if inspections will be performed remotely or onsite: Are there inspection areas or particular types of licensees that are well suited for remote inspection?
8. When deciding if inspections will be performed remotely or onsite: Are there inspection areas or types of licensees that are particularly challenging to perform effectively in a remote environment?
9. ONLY APPLICABLE FOR MATERIALS INSPECTIONS (NMU BL) How has the impact of performing announced inspections during the PHE affected inspections?
10. ONLY APPLICABLE FOR MATERIALS INSPECTIONS (NMU BL) Overall, do feel announcing inspections has had a positive, negative, or neutral impact on the conduct of inspections? Why?
11. ONLY APPLICABLE FOR MATERIALS INSPECTIONS (NMU BL) Do you feel that this change (announcing inspections) has made inspection overall more or less effective or has there been a neutral effect?
12. Technology enabled us to rapidly adapt during the PHE. What specific systems did you utilize in the course of your remote inspections?
13. Technology enabled us to rapidly adapt during the PHE. Are there tools that you needed that you didn't have access to?
14. Technology enabled us to rapidly adapt during the PHE. Were the instructions and guidance for using technological tools sufficient, or are more resources needed?
15. Do IP's and IMC's need revisions in order to accommodate our lessons learned during the PHE into our inspection program during normal times?
16. Do you feel that there have been any missed opportunities that could have helped the NRC respond to the PHE more-efficiently overall?

17. What has been the feedback that you have received from licensees regarding remote and hybrid inspections?

18. Do you have anything additional feedback to add?

Regional/Office Branch Chiefs - Interview Questions

1. The NMWSP span across all regions and different divisions in NMSS, what was your experience with regard to communications, coordination, and guidance with the program office, and among regional counterparts during the PHE? Do you have any feedback or recommendations you would like to share to improve any of these in the future?
2. What has been the most significant challenge, related to inspection activities, you experienced since the NRC went to mandatory/maximum flexibility telework? What do you believe can be done to address it?
3. What has been the most significant success story that you've experienced in the implementation of the oversight programs during the COVID-19 PHE?
4. Considering what the agency has experienced implementing inspection/oversight programs in the past year, what specific enhancements would you recommend for the effective, and efficient implementation of the NMWSP inspection programs?
5. In light of how the oversight programs were implemented during the COVID-19 PHE (e.g., relying more on remote/hybrid inspections), what should we keep, and what should we stop when we return to normal operations? (When the agency is no longer in exercising telework flexibilities due to the PHE or with travel restrictions)
6. What is one area that the agency should focus on now to improve oversight programs (including inspections) to prepare for future pandemics or other national emergencies that may affect the implementation of oversight programs?
7. Has your experience overseeing the inspection programs in your organization during the COVID-19 PHE changed your vision for the future of the oversight program?
8. What has been the feedback provided to you from licensees on alternate means (remote) for inspection or hybrid inspections?
9. What has been the feedback from your staff on inspection activities during the COVID-19 PHE (remote/ hybrid/ or onsite inspections)?
10. What would have been nice to have to do your job better (related to inspections) during the COVID-19 PHE?
11. How was your experience with the various information technology tools available to support inspection activities? Do you have any recommendations for improvement?
12. Do you have anything else that you would like to share?

Regional/Office Division Directors -Interview Questions

1. The NMWSP span across all regions and different divisions in NMSS, what was your experience with regard to communications, coordination, and guidance with the program office, and among regional counterparts during the PHE? Do you have any feedback or recommendations you would like to share to improve any of these in the future?
2. What has been the most significant challenge, related to inspection activities, you experienced since the NRC went to mandatory/maximum flexibility telework? What do you believe can be done to address it?
3. What has been the most significant success story that you've experienced in the implementation of the oversight programs during the COVID-19 PHE?
4. Considering what the agency has experienced implementing inspection/oversight programs in the past year, what specific enhancements would you recommend for the effective, and efficient implementation of the NMWSP inspection programs?
5. In light of how the oversight programs were implemented during the COVID-19 PHE (e.g., relying more on remote/hybrid inspections), what should we keep, and what should we stop when we return to normal operations? (When the agency is no longer in exercising telework flexibilities due to the PHE or with travel restrictions)
6. What is one area that the agency should focus on now to improve oversight programs to prepare for future pandemics or other national emergencies that may affect the implementation of the oversight programs?
7. How has your experience overseeing the inspection programs in your organization during the COVID-19 PHE changed your vision for the future of the oversight programs?
8. What has been the feedback provided to you from licensees on alternate means (remote) for inspection or hybrid inspections?
9. What would have been nice to have to do your job better (related to inspections) during the COVID-19 PHE?
10. Do you have anything else that you would like to share?

Office Directors and Regional Administrators- Interview Questions

1. The Nuclear Materials and Waste Safety Programs span all regions and different divisions in NMSS, what was your experience with regard to communications, coordination, and guidance with the program office, and among regional counterparts during the PHE? Do you have any feedback or recommendations you would like to share to improve any of these in the future?
2. What has been the most significant challenge, related to inspection activities, you experienced since the NRC went to mandatory/maximum flexibility telework? What do you believe can be done to address it?
3. What has been the most significant success story that you've experienced in the implementation of the oversight programs during the COVID-19 PHE?
4. Considering what the agency has experienced implementing inspection/oversight programs in the past year, what specific enhancements would you recommend for the effective, and efficient implementation of the NMWSP inspection programs?
5. In light of how the oversight programs were implemented during the COVID-19 PHE (e.g., relying more on remote/hybrid inspections), what should we keep, and what should we stop when we return to normal operations? (When the agency is no longer in exercising telework flexibilities due to the PHE or with travel restrictions)
6. What is one area that the agency should focus on now to improve oversight programs to prepare for future pandemics or other national emergencies that may affect the implementation of the oversight programs?
7. How has your experience overseeing the inspection programs in your organization during the COVID-19 PHE changed your vision for the future of the oversight programs?
8. What has been the feedback provided to you from licensees on alternate means (remote) for inspection or hybrid inspections?
9. Do you have anything else that you would like to share?