Modernization of Poultry Slaughter Inspection

Analysis of Specified Offline Tasks for Establishments Converting to the New Poultry Inspection System

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Executive Summary

The final rule to modernize poultry slaughter inspection was published on August 21, 2014 and went into effect on October 20, 2014. This rule established an additional inspection system called the New Poultry Inspection System (NPIS) for young chicken and all turkey slaughter establishments. NPIS allows Food Safety and Inspection Service (FSIS) inspectors to perform more offline inspection activities that are focused on ensuring food safety, while providing for more efficient and effective online carcass-by-carcass inspection. This is achieved by permitting establishment personnel to sort carcasses and remove unacceptable carcasses and parts before the birds are presented to FSIS for carcass inspection and assigning one inspector to perform the online carcass inspection (CI) duties and one to perform offline verification inspection (VI) activities for each evisceration line.

This analysis includes 72 formerly non-HIMP (HACCP-Based Inspection Models Project) establishments that converted to NPIS, using Public Health Information System (PHIS) inspection task data from May 2015 to April 2019. Specifically, it examines eleven food safety-related offline tasks 30 to 120 days[1] before and 30 to 120 days after each establishment's NPIS conversion date to determine if the number of completed tasks increased as expected. This report shows that inspectors consistently completed a higher number of selected food safety-related offline inspection tasks, including the new NPIS inspection tasks after NPIS implementation, as expected. Two new tasks, NPIS Zero Tolerance Food Safety Verification and NPIS Poultry Ready-to-Cook were developed for offline Consumer Safety Inspectors (CSIs) to verify requirements. The NPIS Zero Tolerance Food Safety Verification task replaces the Poultry Zero Tolerance verification task, which was in effect prior to NPIS for these establishments.

Overall, this analysis shows, as expected, that the new 15J NPIS Zero Tolerance Food Safety Verification task is being performed at or near four times more often after NPIS conversion as compared to the pre-NPIS 03J04 Poultry Zero Tolerance Verification task.

The Noncompliance Records (NRs) for these zero tolerance verification tasks more than tripled in conjunction with the increase in tasks performed, indicating the new policy was effective in consistently detecting and correcting food safety issues under NPIS. The overall rate of Noncompliance (NC) for these tasks was slightly lower after NPIS conversion in the aggregate, with variations in the NC rate among establishments.

Performance of all other analyzed offline tasks increased from 4% to 40%[2] for the specific inspection tasks reviewed. This is one of the main purposes of NPIS, namely to make more

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[1] For each NPIS establishment reviewed, a 30-day window was first determined before and after the NPIS conversion date and data from this window were excluded from the analysis to allow for an adjustment period for NPIS implementation. Inspection results were then reviewed for the 90-day period before and after the 30 day before and after window.

[2] The increase for 03J02 Slaughter HACCP tasks was 83%, but there were two establishments that had an inflated number of tasks due to a recording error. When these outliers were removed, there was a 40% increase for 03J02 Slaughter HACCP tasks.

time available for performing other offline tasks within the establishment. There were increases in NRs for the additional offline tasks as well.

I. Purpose

The purpose of the analysis described in this report is to review and assess establishments that have converted to NPIS and to determine whether specific offline Public Health Information System (PHIS) inspection tasks, including the new NPIS zero tolerance task, were performed more frequently after conversion to NPIS, as expected. Noncompliance totals and rates were also compared before and after NPIS conversion.

II. Introduction/Background

The final rule to modernize poultry slaughter inspection was published on August 21, 2014 and went into effect on October 20, 2014. This rule established NPIS for young chicken and all turkey slaughter establishments. NPIS requires that establishment personnel sort carcasses and remove unacceptable carcasses and parts before the birds are presented to the FSIS carcass inspector. This allows shifting of agency resources to conduct more offline inspection activities that are more effective in ensuring food safety. Specifically, under NPIS, one inspector is assigned to perform online carcass inspection (CI) duties, and one inspector is assigned to perform offline verification inspection (VI) duties for each evisceration line. Additionally, the Finished Product Standards (FPS) used in establishments continuing to operate under the Streamlined Inspection System (SIS), New Line Speed Inspection System (NELS), and New Turkey Inspection System (NTIS), are replaced with a requirement that establishments maintain records to document that the products resulting from their slaughter operations meet the definition of ready-to-cook (RTC) poultry.

By assigning an offline inspector to each evisceration line, inspectors are able to complete a higher number of offline inspection tasks. Previously, one offline inspector covered multiple evisceration lines. Two new offline tasks, NPIS Zero Tolerance Food Safety Verification and NPIS Poultry Ready-to-Cook were developed for offline CSIs to verify requirements. The NPIS Zero Tolerance Food Safety Verification task replaces the Poultry Zero Tolerance verification, which was pre-NPIS for these establishments. This new zero tolerance task is expected to be performed once per hour in an eight-hour shift per evisceration line, compared to just twice in an eight-hour shift per evisceration line with the other inspection systems. The NPIS Poultry Ready-to-Cook task replaces the FPS verification for establishments operating under NPIS and is scheduled once per month as a routine task. This routine task is primarily a records check of the establishment to ensure that poultry RTC procedures are being performed as required. There is an option to perform additional tasks as needed if assigned by the Public Health Veterinarian (PHV), Inspector in Charge (IIC) or designee.

Under NPIS, each offline inspector is to pull 10 birds off the line prior to the online carcass inspector each hour to verify that the establishment meets the zero tolerance standard for visible fecal material, and for Septicemia and Toxemia (Sep/Tox) using the NPIS Zero Tolerance Food Safety Verification task. Thus, during an 8-hour shift, 80 birds are to be

checked, compared to only 20 birds under prior non-HIMP systems in an 8-hour shift for each evisceration line. This is one of the key offline tasks which is reviewed with respect to frequency before and after NPIS conversion.

This analysis provides a review of inspection results for establishments that have converted to NPIS for specific food safety-related tasks 30 to 120 days before and 30 to 120 days after the NPIS conversion date to determine if the expected frequency is occurring for the NPIS Zero Tolerance Food Safety Verification task and to see if there is a general increase in other selected food safety-related offline tasks as expected for NPIS establishments. The final rule establishing NPIS [3] states that it is designed to facilitate pathogen reduction in poultry products by shifting Agency resources to allow FSIS inspectors to perform more offline inspection activities that are more effective in ensuring food safety, while providing for a more efficient and effective online carcass-by-carcass inspection.

The tasks that were reviewed as part of this analysis are listed in Table 1. The sanitation tasks (SSOP) and HACCP tasks included in this list were identified as key offline tasks that are more effective in ensuring food safety as outlined in the final rule, and these are expected to increase with NPIS. The other tasks assessed include pre-NPIS and post-NPIS Zero Tolerance, Poultry Finished Products Standards, NPIS Poultry Ready-to-Cook, and Poultry Good Commercial Practices.

Table 1 - List of Tasks Reviewed[4]

Inspection Task Code	Inspection Task Name	Description
01B02	Pre-Op SSOP Review and Observation	Review the establishment's SSOP and become familiar with the procedures
01C01	Operational SSOP Record Review	Verify operational SSOP records
01C02	Operational SSOP Review and Observation	Verification of the establishment's operational SSOP
01D03	Poultry Sanitary Dressing	Verification of sanitary dressing in poultry slaughter
03A04	Review of Establishment Data	Weekly review of establishment data per Directive 5000.2
03J02	Slaughter HACCP	Verification of all 5 HACCP regulatory requirements through the review/observation and recordkeeping components
03J04	Poultry Zero Tolerance Verification	Verifcation of zero tolerance for feces on poultry carcasses entering chilling system
04A06	Poultry Finished Product Standards	Verify poultry products are produced in a safe, wholesome manner and not misbranded
04C05	Poultry Good Commercial Practices	Poultry Good Commercial Practices
15A06	NPIS Poultry Ready-to-Cook	Ready to Cook Task for NPIS establishments
15J	NPIS Zero Tolerance Food Safety Verification	Verification of zero tolerance for feces in NPIS system establishments

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[3] Department of Agriculture, Food Safety and Inspection Service, 9CFR Parts 381 and 500, *Modernization of Poultry Slaughter Inspection; Final Rule,* Federal Register Vol. 79 No. 162, August 21, 2014.

[4] This includes the Poultry Sanitary Dressing task, which has subsequently been discontinued as of 11/28/2016 as described in Directive 6420.5, V*erifying Poultry Slaughter Establishments Maintain Adequate Procedures for Preventing Contamination with Feces and Enteric Pathogens (Oct 17, 2016).*

III. Methodology

Change in the number of tasks completed is calculated to determine the level of increase or decrease after conversion to NPIS. A four-fold increase in the new NPIS Zero Tolerance Food Safety Verification tasks is generally expected for establishments converting from a traditional system to NPIS and "no change" for zero tolerance tasks is generally expected for HIMP plants converting to NPIS. The other offline inspection tasks reviewed are expected to increase following establishment conversion to NPIS, but not by a specified factor. As such, the analysis of zero tolerance and other selected offline inspection tasks is limited to establishments that converted from non-HIMP to NPIS.

Data Used

For this review, FSIS extracted inspection data from PHIS for the specific tasks outlined in Table 1. The data elements used for this project were extracted for the period May 2015 through April 2019 for 72 NPIS establishments that were formerly non-HIMP and converted to NPIS. In addition, PHIS task information for 30 days prior and 30 days after the NPIS conversion date for each establishment was excluded in various calculations to mitigate effects of data variation during the NPIS transition period.

IV. Results and Discussion

Task Analysis

The inspection results summary for the NPIS establishments that were formerly non-HIMP as of January 2019 are presented in Table 2. The table illustrates the overall totals for each

Table 2 – Selected Total Offline Tasks Performed Before and After Conversion to NPIS for 72 Formerly Non-HIMP Establishments

Inspection Task Code	Task Name	Total Tasks 3 Months Pre NPIS	Total Tasks 3 Months Post NPIS	Ratio Post NPIS Pre NPIS
03J04	Poultry Zero Tolerance Verification	36,948	247	n/a
15J	NPIS Zero Tolerance Food Safety Verification	0	141,429	3.83*
04A06	Poultry Finished Product Standards	44,030	70	n/a
15A06	NPIS Poultry Ready-to-Cook	0	492	0.01**
01B02	Pre-Op SSOP Review and Observation	2,053	2,327	1.13
01C01	Operational SSOP Record Review	4,761	5,577	1.17
01C02	Operational SSOP Review and Observation	6,743	8,018	1.19
01D03	Poultry Sanitary Dressing	358	443	1.24
03A04	Review of Establishment Data	1,648	1,757	1.07
03J02	Slaughter HACCP	3,993	7,291	***1.83
04C05	Poultry Good Commercial Practices	9,368	9,703	1.04

*Ratio Zero Tolerance = NPIS Zero Tolerance Food Safety Verification (15J)/Poultry Zero Tolerance Verification (03J04)

**Ratio NPIS Poultry Ready-to-Cook = NPIS Poultry Ready-to-Cook (15A06)/Poultry Finished Product Standards (04A06)

***Two establishments were outliers with very high task totals - without these two establishments the ratio is 1.40

task type, as well as a ratio of the Post-NPIS/Pre-NPIS tasks, which provides a measure of the increase in task frequency, as applicable.

The area highlighted in green in Table 2 depicts the tasks that include the 10-bird checks, specifically Poultry Zero Tolerance Verification (03J04 prior to NPIS), and NPIS Zero Tolerance Food Safety Verification (15J after NPIS conversion). This task was expected to increase four-fold after NPIS conversion assuming the same levels of production before and after. As Table 2 illustrates, the NPIS Zero Tolerance Food Safety Verification Task overall for these establishments was performed about 4 (3.83) times more after NPIS conversion, as expected, in the aggregate (36,948 pre NPIS / 141,429 post NPIS).

The Poultry Finished Product Standards task, highlighted in blue in Table 2 and included with tasks performed prior to NPIS conversion, is not applicable under NPIS as the establishment assumes the responsibility to ensure poultry is ready-to-cook; this explains the major decrease in this task performed post NPIS. The NPIS Poultry Ready-to-Cook task is a new task that replaces the Poultry Finished Product Standards task. This task is scheduled once per month as a routine task. The routine task is primarily a records check to ensure that poultry ready-to-cook procedures are being performed by the establishment as required. There is an option to perform additional NPIS Poultry Ready-to-Cook tasks as needed if assigned by the PHV, IIC or designee.

As Table 2 illustrates, the Slaughter HACCP task almost doubled pre and post NPIS conversion, however, this total was heavily influenced by two establishments. Follow up by District Office management responsible for those two establishments, which were both in the same circuit, revealed that Inspection Program Personnel (IPP) were recording inspection of parts as individual tasks which led to the completion of unnecessary tasks. When these two establishments are removed from the ratio calculation, post-NPIS totals for 03J02 (Slaughter HACCP) are 1.40 when compared to pre-NPIS (3,844 pre-NPIS/5,368 post-NPIS).

A summary of the percentage change in the number of offline tasks performed in the 30-120 day period after NPIS conversion by task is shown in Table 3. All Sanitation Standard Operating Procedures (SSOP) tasks increased, with tasks 01B02 Pre-Op SSOP Review and Observation (+13%), 01C01 Operational SSOP Record Review (+17%), and 01C02 Operational SSOP Review and Observation (+19%) having considerable increases. The

Table 3 – Selected Total Offline Tasks Performed by Aggregate Percentage Increase after NPIS Conversion for 72 Formerly Non-HIMP Establishments

PHIS Task Code	Task Name	Percent Increase
01B02	Pre-Op SSOP Review and Observation	+13%
01C01	Operational SSOP Record Review	+17%
01C02	Operational SSOP Review and Observation	+19%
01D03*	Poultry Sanitary Dressing	+24%
03J02**	Slaughter HACCP	+83%
04C05	Poultry Good Commercial Practices	+4%
*Task discontinued 11/2016		
**Two establishments were outliers with very high totals - without these two there is a 40% increase		

03J02 Slaughter HACCP tasks increased by the highest amount (+83%) but had two heavily influencing establishments as mentioned earlier. Removing these two establishments from the equation, the increase was smaller but remained the highest (+40%).

Noncompliance Analysis

A Noncompliance Record (NR) is a written record that documents noncompliance with FSIS regulations. The Noncompliance (NC) rate is the number of completed tasks with at least one noncompliance divided by the number of completed tasks. The total NRs and NC rate for all establishments for the offline tasks reviewed are given in Table 4.

Table 4 - Total NRs and Noncompliance Percent for Selected Offline Tasks Three Months Before and After NPIS Conversion

Inspection Task Code	Task Name	Total NRs 3 Months Pre-NPIS	Total NRs 3 Months Post-NPIS	Total NC% 3 Months Pre-NPIS	Total NC% 3 Months Post-NPIS
01B02	Pre-Op SSOP Review and Observation	627	677	23.48	22.58
01C01	Operational SSOP Record Review	45	97	0.94	1.71
01C02	Operational SSOP Review and Observation	958	1,464	12.48	15.49
01D03 *	Poultry Sanitary Dressing	8	8	2.20	1.78
03A04	Review of Establishment Data	0	4	n/a	0.23
03J02	Slaughter HACCP	257	231	6.09	3.08
03J04	Poultry Zero Tolerance Verification	381	1	1.02	0.40
04A06	Poultry Finished Product Standards	226	2	0.51	2.78
04C05	Poultry Good Commercial Practices	9	3	0.10	0.03
15A06	NPIS Poultry Ready-to-Cook	0	71		12.72
15J	NPIS Zero Tolerance Food Safety Verification	0	1,238		0.87

*Task 01D03 Poultry Sanitary Dressing was discontinued 11/2016

Areas highlighted in green and yellow represent NPIS poultry zero tolerance task NR counts and NC rate

As shown in Table 4, for 01B02 Pre-Op SSOP Review and Observation tasks post-NPIS conversion, there was an increase in NR counts from 627 to 677, but a slight decrease in the NC rate from 23.48% to 22.58%. The count for 01C01 Operational SSOP Record Review NRs more than doubled from 45 to 97, and the NC rate was close to double from 0.94% to 1.71%. This indicates increased activity and identification of noncompliant situations, which likely stems from the increased time available for IPP to perform these tasks.

The number of NRs for 01C02 Operational SSOP Review and Observation increased in count from 958 to 1,464, and the NC rate increased from 12.48% to 15.49%. This is also a clear indication that more of these tasks were performed by IPP and more NRs were written based upon the period of time reviewed. The 03J02 Slaughter HACCP task NRs decreased from 257 to 231, and the NC rate for 03J02 Slaughter HACCP shows a reduction from 6.09% to 3.08%. As noted earlier there were larger numbers of the 03J02 Slaughter HACCP

tasks recorded as performed in error by two establishments which inflated the post-NPIS totals. When removing these two establishments from the post-NPIS totals for the 03J02 Slaughter HACCP task, there were 5,368 tasks with 218 NRs for a post-NPIS NC rate of 4.06%.

The pre-NPIS conversion 04A06 Poultry Finished Product Standards (FPS) task was performed 44,030 times (typically twice daily in non-HIMP establishments) during the time period included in this analysis, and generated 226 NRs with a noncompliance rate of 0.51%. The 04A06 FPS task is designed for inspectors to verify that the slaughter and evisceration process is under control and is accomplished by IPP examining ten-bird sample sets to determine compliance with the FPS. The post NPIS conversion 15A06 NPIS Poultry Ready-to-Cook task is scheduled once per month as a routine task, was performed 492 times during the time period included in this analysis, and generated 71 NRs with a noncompliance rate of 12.72%. Under the 15A06 task, FSIS inspectors verify that an establishment is producing RTC poultry by reviewing establishment records documenting that the products resulting from their slaughter operation meet the definition of RTC poultry and by observing carcasses as part of their inspection activities.

The largest increase in NR totals pre and post NPIS conversion were in the zero tolerance task NRs, which increased from 381 (03J04 Poultry Zero Tolerance Verification) to 1,238 (15J NPIS Zero Tolerance Food Safety Verification), just over three times more NRs. This is a clear indication that the increased zero tolerance tasks are resulting in consistent documentation of NRs. The NC rate decreased slightly from 1.02% pre-NPIS conversion to 0.87% post-NPIS conversion for the zero tolerance tasks.

V. Conclusion

With the implementation of NPIS, offline tasks completed are expected to increase as an offline inspector is assigned to each evisceration line, and these inspectors are required to complete a higher number of offline inspection tasks. Previously, one inspector covered multiple evisceration lines, which limited the amount of time available to the inspector to complete offline tasks.

The review of selected offline tasks 30-120 days before and 30-120 days after a previously non-HIMP establishment's conversion to NPIS shows that the expected increase in frequency of tasks is occurring in the key task, 15J NPIS Zero Tolerance Food Safety Verification. This indicates the new policy is being implemented effectively in terms of the number of tasks (10-bird checks) performed. In addition, the NRs for this task increased nearly proportionately in the aggregate in conjunction with the added tasks, indicating the new policy was effective in consistently detecting and correcting food safety issues under NPIS. The NC rate for these zero tolerance tasks decreased slightly.

The other offline tasks increased overall as well, from 4% to 40%[5] for the specific inspection tasks reviewed. There were two establishments that performed a higher number of 03J02 Slaughter HACCP tasks, and follow up with the District Office responsible for these two establishments showed this was due to a recording error. Further review showed that adequate corrections were subsequently made by IPP at these two establishments in the performance of the tasks. The NC rate and number of NRs for the 03J02 Slaughter HACCP tasks decreased while the number of tasks increased.

The number of NRs increased for all of the SSOP tasks. The NC rate increased for Operational Record Review as well for Operational SSOP review and Observation and decreased slightly for Pre-Operational SSOP review and Observation.

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[5] The increase for 03J02 Slaughter HACCP tasks was 83%, but there were two establishments that had an inflated number of tasks due to a recording error. When these outliers were removed, there was a 40% increase for 03J02 Slaughter HACCP tasks.