New England Fishery Management Council
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E.F. "Terry" Stockwell III, *Chairman* | Thomas A. Nies, *Executive Director*

MEMORANDUM

DATE: September 7, 2016

TO: Groundfish Committee

FROM: Groundfish Plan Development Team

SUBJECT: **Progress on white paper on groundfish monitoring strategies**

Update on progress

The Groundfish Plan Development Team (PDT) developed an outline for the white paper on groundfish monitoring strategies (dated July 21, 2016) and the Groundfish Committee reviewed this outline at its August 3 meeting. With respect to the outline, *Attachment #1* reflects the completion of Section 1 (problem statement/Council motion and Committee tasking motion). Section 2 (current monitoring system and assessment of meeting the goals and objectives), Section 3 (PDT recommendations on how to improve the system to achieve accuracy and secondarily precision of catch reporting), Section 4 (other recommendations) remain incomplete at this time. The PDT proposed to complete several analyses that would become appendices (Section 5) to the white paper. The following summarizes their status:

a) Overview of how fishery data is used in the groundfish stock assessments (ongoing)

b) Analysis of mis-allocation of catches for multi-stock trips (ongoing)

c) Overview of sector reconciliation process (see *Attachment #2*)

d) Compliance/enforcement analysis for groundfish reporting (ongoing)

e) ASM - CV standard analysis[1] (see PDT memos dated April 13 and June 6, 2016)

f) Analysis of observer bias (ongoing)

g) Dockside monitoring summary and case studies (see PDT draft dated July 6, 2016)

h) Overview of past sources of funding for groundfish monitoring programs (ongoing)

i) Summary of fishery dependent data vision project outcomes (ongoing)

j) Evaluation of costs of improving the monitoring system (ongoing)

[1] The Committee recommended that the PDT discontinue further work on this item, as of the Committee's August 3, 2016 meeting.

Attachment #1

1. Problem Statement for Groundfish Monitoring Action

a) Council Motion on Groundfish Monitoring (January 2016)

At its meeting on January 27, 2016, the Council established a problem statement for the groundfish monitoring action:

> *When Industry-Funded ASM requirements were established in Amendment 16, the expectation was that increased catch limits – as a result of rebuilding – would enable the industry to afford the cost of monitoring. Since 2010, ACLs for many stocks have declined sharply, along with groundfish revenues, and the size of the fleet. The affordability of the ASM program for groundfish sectors is in question. The current configuration of the ASM program may lead to significant economic impacts (i.e., economic losses) to the groundfish fishery and negative social impacts (i.e., those that reduce resiliency and increase vulnerabilities of fishing communities).*
>
> *Therefore, the Council requests analysis of the following by the PDT prior to the April Council meeting to assess whether: (1) the CV requirements and methodologies are the most appropriate to verify area fished, catch and discards by species and gear type for the sector system, and; (2) ASM provides the sector fishery, recognizing heterogeneity within the fleet (e.g., trip length, homeport, etc.), the maximum flexibility to meet ASM goals and objectives.*

b) Groundfish PDT Report (April 2016)

The Groundfish PDT met in March 2016 to address the Council's recommendations for the groundfish monitoring action. During the development of FW 55 at its September and October 2015 meeting, the Council prioritized a list of groundfish monitoring program measures for inclusion in the action:

1. Remove the ASM requirement for ELM trips
2. Performance criteria for when stocks necessary to meet CV standard
3. Sector-specific coverage requirements*
4. CV standard as a target*
5. Sector-specific monitoring buffers or discard rates* At the time of prioritizing this list, it was determined that measures 3-5 (marked with a "*") were unlikely to be developed in FW 55, in order for any changes to the groundfish monitoring program to be implemented in time for May 1, 2016. Further, it was indicated that NMFS could develop measure 3 under its existing authority, while measures 4 and 5 would likely require additional time, and potentially an amendment to the FMP (depending on the specifics of the alternatives). The Council agreed that the PDT would focus on measures 1 and 2 within FW 55. Measures 3-5 could be considered in a trailing action.

The PDT discussed the current groundfish monitoring system with respect to the ability to verify area fished, catch and discards by species and gear type for the sector system. The PDT

recognizes that while ASM monitoring requirements focus on the precision of discard estimates, overall catch estimation is the monitoring goal.

Verify area fished:

- Information on area fished is provided by industry through VTRs.
- Starting in FY 2010, NMFS required VMS catch reports.
- NEFOP, ASM and VMS information could be used to verify area fished.

Verify landings by species and gear type:

- Information on landings by species is provided through dealer reports.
- Information on gear type is provided by industry through VTRs (dealers record the VTR number).
- NEFOP, ASM, EM and portside monitoring could be used to verify landings by species and gear type.

Verify discards by species and gear type:

- NEFOP and ASM data is used to verify discards by species and gear type.
- EM could be used to verify discards by species and gear type.

The PDT discussed item #2 with respect to landings accuracy, discard precision, and discard accuracy.

Landings accuracy

- Landings accuracy is particularly important for the ACE trading market, accounting for highly constraining stocks, and stock assessments.
- Increase ASM coverage and the usage for species composition information. • Develop a portside sampling program.
    - Some considerations:
        - Do 100% of trips need to be sampled?
        - If not, what rate of portside sampling coverage is needed? ♣ Examine issues, concerns, and data from the 2010 dockside monitoring program.

Discard precision

- Optimizing stratification by trip length/home port or adding/removing other strata.
- Examine how to preferentially target stocks for monitoring coverage to improve discard estimation.
- Discard methodology review by GARFO/NEFSC later this year will examine the cumulative approach.

Discard accuracy

- Improved retention of catch (maximized or full retention with portside samplers).

- Using EM as a tool within the overall monitoring program (e.g., catch composition or compliance).
- Revisit analytical work done during the development of FW48.

c) Committee Tasking to PDT on Groundfish Monitoring White Paper (April 2016)

At the Groundfish Committee meeting on April 7, 2016, Council staff provided an update on the outcome of the January 2016 Council meeting (i.e., problem statement for groundfish monitoring action), and provided an overview of the PDT discussion on groundfish monitoring at a PDT meeting on March 30, 2016. The Groundfish Committee tasked the PDT with developing a white paper on monitoring strategies (ASM, shoreside, electronic, etc.) that would primarily contribute to accuracy and secondarily precision of groundfish catch reporting. The white paper should include a review of existing shoreside monitoring programs as well as past Council decisions on dockside monitoring with respect to achieving accuracy and precision in reporting of groundfish bycatch and landings as well as funding sources for the programs. The Groundfish Committee is interested in examining ways to improve the groundfish monitoring system altogether, rather than only focusing on refining a DSM program from the past. The Committee discussed the importance of accurate catch accounting by harvesters and dealers, and requested that NMFS provide information on the level of compliance with groundfish catch reporting (harvester and dealer) to date.

SECTOR DATA RECONCILIATION

PDT WORKING DOCUMENT

Introduction

The groundfish sector management system is a voluntary catch share program that allocates quotas to self-selecting groups of fishermen (sectors) in exchange for those sectors taking on increased monitoring and reporting responsibilities. The Greater Atlantic Regional Fisheries Office (GARFO) works with sectors to reconcile the available data to ensure all parties are using accurate information to track catch. Trip data from different data sources must match each other. If the data don't match, at least some data elements are wrong, or missing, or both. Of the data sources coming in to GARFO, two have particular importance in trip matching. These are Vessel Trip Reports (VTR) and Dealer Reports.

GARFO has a Quality Assurance (QA) team in the Analysis and Program Support Division (APSD). The QA team investigates and corrects problem data generated from Federally-permitted fishing trips. This process of fixing problem data is called ***trip-level data reconciliation*** (which is sometimes referred to simply as "reconciliation"). The term "trip-level" simply means "an entire fishing trip": that is, from the time a vessel owner/operator declares an intention to fish until the catch from that trip is sold.

To properly manage all the catch information, GARFO must perform three main tasks:

1. **Filter, organize, and store the incoming data.**
2. **Process the data to identify accurate versus inaccurate trip records.**
3. **Investigate the inaccurate records, making corrections as needed.**

GARFO Applications for Processing Data

To investigate the data sources discussed in the previous section, we use the output from the following two GARFO data-processing applications:

- **Raw Trip Level (RTL)**

  RTL is a Quality Control (QC) trip matching program. RTL checks trips through a batch processing method. RTL processes all of the submitted VTR and Dealer data, Sector Detail reports, and Observer tables to date. RTL performs ***initial trip matching*** and shows non-matching output for trips. The RTL data set is refreshed weekly.

- **Data Matching and Imputation System (DMIS)**

  DMIS performs several tasks, including ***quota monitoring***, ***trip matching***, and ***trip imputation***. DMIS runs once per week after the RTL run.

Table 1: Reports and Resources

Data Source	Report / Resource	Description
Vessel owner/operator	Vessel Trip Report (VTR)	Report describing fishing trip. Included: • when fishing occurred • where and how fishing occurred • which species were caught • which dealer(s) bought the catch
Seafood dealer	Dealer report	Report describing catch sale. Included: • when fish were sold • which vessel caught the fish • which species were sold • what the catch weighed
Sector manager (if applicable)	Sector Report	Report describing fishing trips by members of a valid sector. Included: • when fishing occurred • how fishing occurred • which stocks were caught • how much catch was kept • how much catch was discarded
Trip observer	Observer report	Report describing independent, on-board observation of fishing activity. Included: • when the vessel fished • how the vessel fished • which stocks were caught • how much catch was kept and how much was discarded
Vessel Monitoring System (VMS)	<Requirement varies per fishery>	Reports and/or notifications filed from the vessel that is legally required to have a VMS unit onboard. The VMS unit communicates by satellite to GARFO. Reports include Multispecies Catch report, Scallop Daily Catch report, and Herring Daily Catch report. Notifications include Multispecies Trip Start and End Hail, Scallop Pre-land, and Herring Pre-land.
Interactive Voice Response (IVR)	IVR preland / post-land reports	Reports and/or notifications filed from the vessel that is legally required to have a VMS unit onboard.
Permits database	Federal vessel permit record	Allows permit holder to fish in Federal waters as part of a specified fishery.
SIMM	Sector Detail report	GARFO aggregation of sector trip data, including vessels, dealers, observers, and sector manager reporting support information
Moratorium rights database	Moratorium Right Identifier (MRI)	Indicates fishing status of the hull possessing the MRI. No fishing without valid MRI. Status indicators: • Active • Inactive • Certified Permit Holder (CPH)
GARFO	Sector Comparison report	Report compiled from various GARFO sources that consolidates sector fishing activity data for comparison purposes.
Outreach	—	IDI team member contacts industry (vessel owners, dealers, etc.) for supplemental or missing information about a trip or trips.

Data Flow Summary

Refer to Figure 1, Figure 2, and Figure 3 for graphic representations of the data flow from various industry and GARFO sources into the RTL and DMIS data-processing applications.

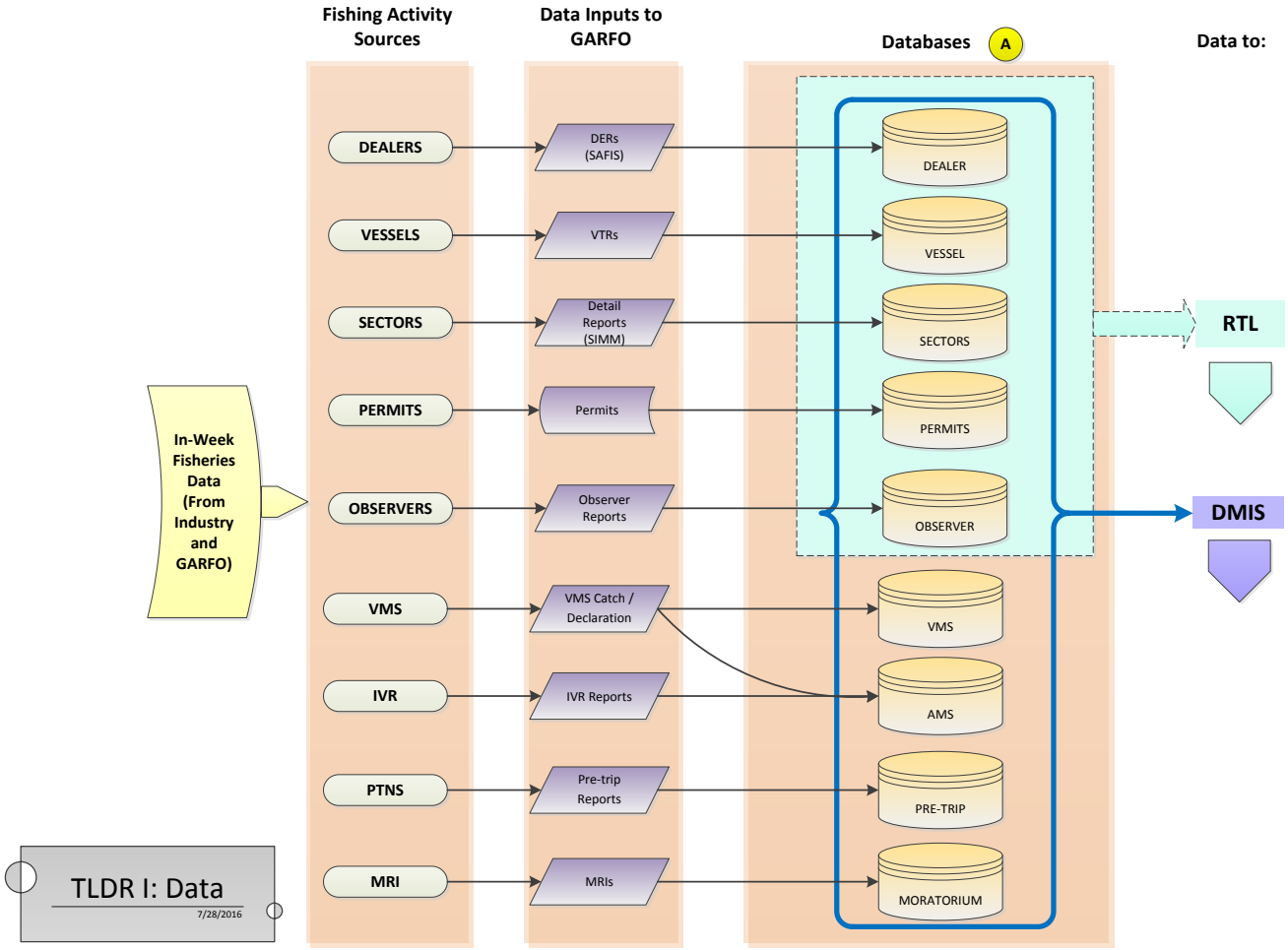

Figure 1: Data Flow Into GARFO

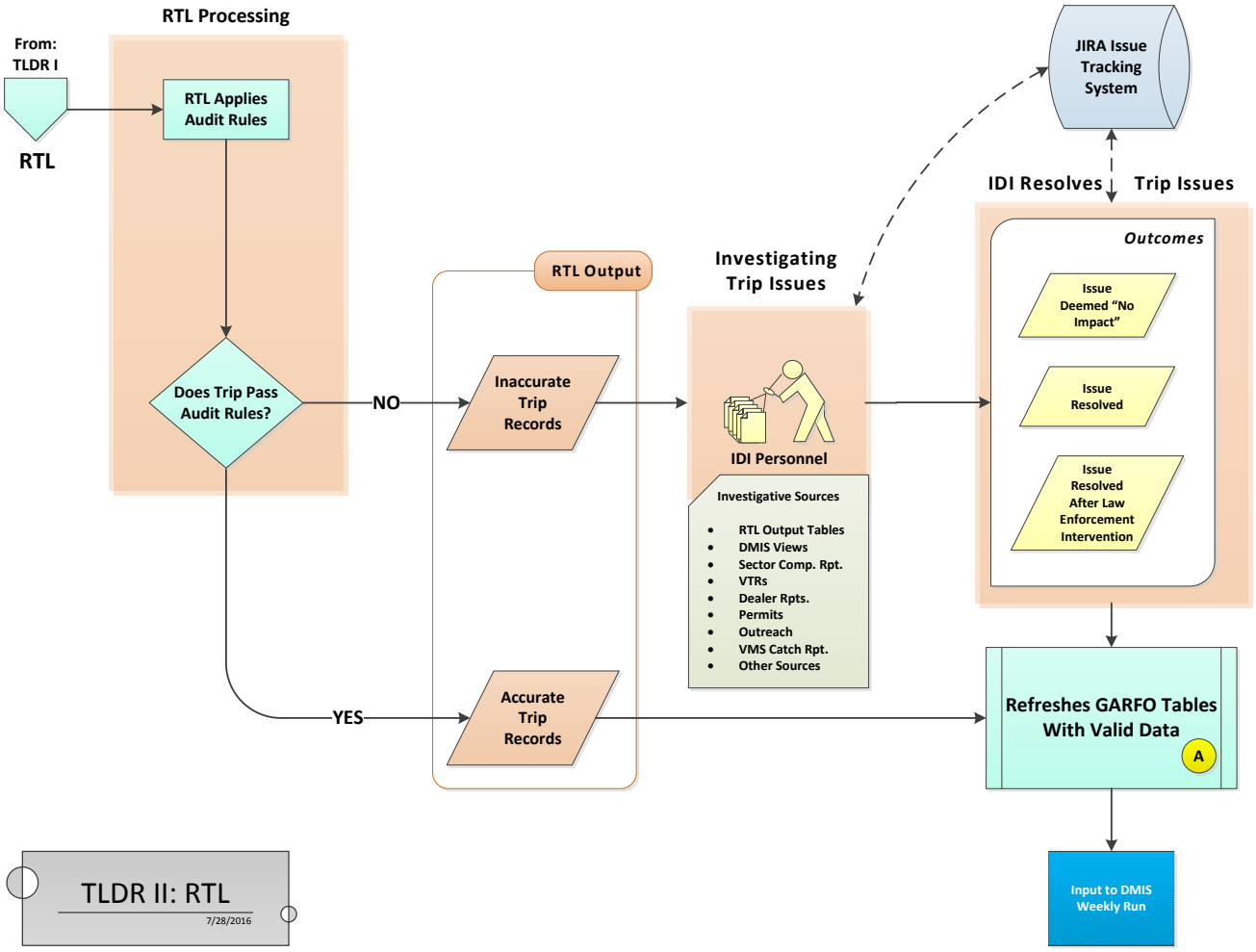

Figure 2: Investigating RTL Output

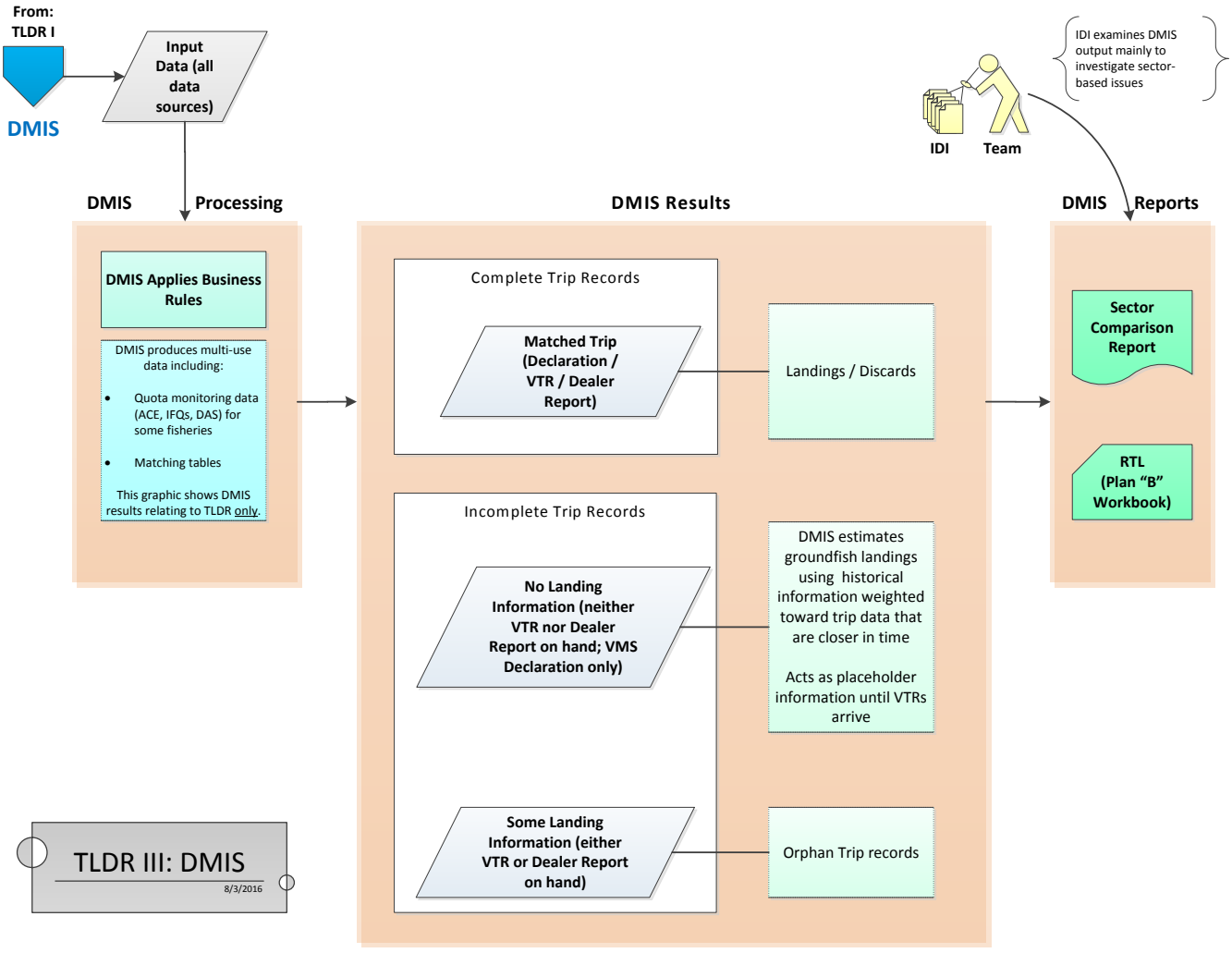

Figure 3: RTL – Investigating DMIS Output