NMFS Electronic Vessel Trip Reporting (eVTR)
Technical Requirements
Phase One

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Introduction

Beginning in 2011, the NMFS NE Region is implementing electronic reporting of Vessel Trip Reports (VTRs) available on a voluntary basis. This document specifies detailed technical requirements that must be satisfied to successfully implement electronic reporting in a manner that supports all stakeholders and provides either the same or a greater level of reporting, security and efficiency as the required by the current regulations. This document specifies the essential technical requirements to implement electronic reporting of Vessel Trip Reports during Phase One. Some technical requirements may change in subsequent phases as systems are tuned to meet industry and agency needs,

Business rules

Unique Trip identifier

Each trip must have a unique trip identifier. The trip identifier must have the following format:

A concatenation of the federal vessel permit number (6 digits) and the year (2 digits), month (2 digits), day (2 digits) and hour (2 digits based upon 24 hour clock or military time) when the trip identifier was created (e.g., 12345609051210; pppppppyymmddhh).

The year, month, day and hour portion of the trip identifier can represent any point during the trip between the time of sailing and the first landing event of a trip. If a partial trip transmission occurs (e.g., daily catch reports), the trip identifier must be generated before any partial trips are transmitted. See section "Optional Features for ELB Client Software Systems", beginning on page 6, for details on filenames for partial trips transmissions.

Once a trip identifier is generated by the electronic logbook (ELB) program it cannot be changed. It becomes the critical link to identify the trip throughout all of the fisheries dependent data collection systems. The ELB program must keep a history of trip identifiers generated. The trip ID history should be used by the algorithm that generates the trip ID to ensure that there are no duplicates

Data collection rules

1. Reporting must be accomplished using a NMFS-NE type-approved ELB software system that can be deployed and operated on a fishing vessel while at sea.

2. Electronic vessel trip reporting systems must allow the vessel to meet existing VTR regulations, [50 CFR 648.7]. Electronic vessel trip reports must, at a minimum, contain all of the data elements collected on the paper vessel trip reports.

3. Catch and effort data are to be collected at the subtrip-level or haul-by-haul level. Definitions of haul-by-haul and subtrip are provided in Appendix E. The subtrip-level meets the regulatory VTR reporting requirements. Collection of data at the haul-by-haul level is optional. If data are collected at the haul-by-haul level, they will be summarized server-side by NMFS to meet the current VTR regulations.

   Haul-by-haul data collections: Statistical area fished and corresponding point location must be based on the location of the start of the haul back. There are four events associated with a fishing effort: start of the set, end of the set, start of the haul back, and end of the haul back. Not all effort events must be collected for each gear type, but at a minimum, each effort record must contain the start haul back information. Definitions of effort events are provided in Appendix C. Diagrams to illustrate the haul-by-haul definitions of set and haul effort events are in Appendix D. **Haul-by-haul reporting is optional.**

   Subtrip-level reporting: The allocation of catch to gear type and statistical area should be based on the captain's good faith hail. Catch cannot be allocated to statistical areas based on automated means. For example, applications should not use the time spent in a given statistical area to automatically allocate the catch to statistical area.

4. Apportionment records (landed fish) must be reported separately from catch. Catch records associate the catch with fishing effort (gear parameters, location and the amount of effort) where as apportionment records associate the landed catch with a port of offload, date of offload, dealer and date of sale. Landing amounts can vary independently from the retained catch amounts; however, all species records recorded as retained catch must have at least one landing record and all landing records must have been reported as catch.

Quality Assurance/Quality Control (QA/QC)

While the NMFS server-side database system will enforce stringent QA/QC, developers are encouraged to ensure that the client software also enforces QA/QC (to the extent possible). Recommended methods include, but are not limited to the following:

- Validating entries against support tables, e.g., species codes, gears, ports, etc.

- Using value ranges to detect outliers or bad entries.
- Ensuring that dates follow the appropriate sequence (e.g., land dates occur after the sailing date).
- Not allowing the user to bypass required entries.
- Usage of short lists where possible to encourage the usage of proper coding.
- Having a method to allow software support tables to be easily updated and current. For Fisheries Landings Data Reporting System (FLDRS), an FTP site will be provided where the vessel operators may download the latest version of support tables (ftp://ftp.nefsc.noaa.gov/pub/dropoff/eVTR_support/).

The goal is to collect the data as error-free as possible at the source to reduce the numbers of fatal and informational errors in the final reports. . Errors negatively impact the efficient processing of eVTR data. A list of potential fatal and informational errors are provided in Appendix F.

Application Security

1. Files transmitted to NMFS must adhere to the RFC4880 standard[1] (which includes PGP, OpenPGP, GnuPGP, etc.). **NMFS will provide the public key for file encryption upon request**.

   The following procedure is an example of how the RFC 4880 standard was met for the FLDRS software system.

   The eVTR data are encrypted with the Open Source GnuPG software which compiles to RFC 4880 standards. The Microsoft Windows version of GnuPG called "Gpg4win" (http://www.gpg4win.org) is being used on the client software (the sending host). On the Linux server (the receiving host), GnuPG is installed by default. A 1024bit-RSA public/private key pair was generated on the Linux server. The public key was exported and sent to the client and imported. The client software encrypts the data file using the public key and sends the encrypted data to the Linux server where it is decrypted using the private key and pass-phrase used to protect the private key.

2. **Electronic signature requirements:** Upon completion of a trip report operators must enter their operator pin number/password **(supplied by the NMFS Regional Office)** as a means of digitally signing their eVTR submission. The eVTR software must require the operator to enter the password twice before the trip can be successfully signed. The password will be stored in the encrypted version of the data file and authenticated upon receipt by NMFS The password should never be stored in the client eVTR software

[1] http://www.rfc-editor.org/info/rfc4880

database. The following password content information is provided so developers will know the format and content.

a. The password will be between 8 and 12 characters long and meet the following criteria:
   i. At least 1 capital alpha
   ii. At least 1 lower case alpha
   iii. At least 1 numeric
   iv. At least 1 special character from the following list: ~ ! @ # $ % ^ & * ( ) _ - + = { } [ ] \ | : ; < > , . ? /
b. The application must display the following text during the signing ceremony: "*I certify that the vessel trip information I am providing is true, complete and correct to the best of my knowledge, and made in good faith. Making a false statement is punishable by law (18 U.S.C. 1001).*"

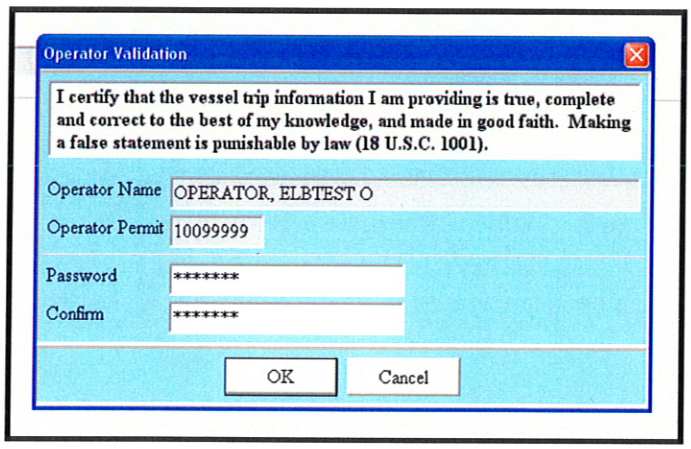


Figure 1. Example of the signing ceremony in an eVTR application.

3. Client Software Security Measures

- The eVTR software will record the following events in an audit log with each auditable item:
- Date-time stamp,
- Unique identifier of the eVTR software
- Username of the operator performing the event
- Successful and unsuccessful login attempts
- Creation of a trip report
- eVTR completion and signing ceremony
- Any transmission of data
- The eVTR software must store audit logs in a way that cannot be viewed, deleted, or manipulated by end-users of the computer. Audit information may be stored in an internal database that can only be accessed by an

administrator. Audit logs over a year old may be removed by the eVTR software.

- The operator must have the ability to log out of the eVTR software at any time. The system should at least save or ask to save the data recorded at the prior to logging out of the application.

4. Data File Transmission

Supported transmission methods for the file:

a. Email attachment. The file name is the trip identifier. Send the encrypted data file as an email attachment: eVTR@noaa.gov

b. Satellite transmission capabilities of the VMS vendor
   i. Data files should be transmitted in an encrypted zip file in accordance with the technological capabilities of the satellite communication provider (e.g., Boatracs, SkyMate, Thrane & Thrane). The zip file is intended to reduce the size of the transmitted file. The satellite communications unit must send the data files in email form to the email address (eVTR@noaa.gov). The zip file can either be sent as an attachment or imbedded in the email as UUEncoded text. The serial number of the satellite communications unit must be in the subject line in the form of <VMS serial number>filename (e.g., <123456ST>12345611061512). NMFS encourages software vendors to discuss methods to accomplish the specified format directly with satellite communication service providers.

c. Upload via HTTPS (website or automated)
   Users will be able to bypass satellite transmission of trip files by loading them directly through the Northeast Fisheries Science Center's Vessel Electronic Reporting (VERS) web portal. The web portal will only allow whole trips to be uploaded. Therefore, the upload of partial trips will not be supported via HTTPS upload. Vessel owners and operators will require access credentials to use the web portal, for example, their operator username and password. https://fish.nefsc.noaa.gov/vers

View Completed VTR Onboard

The eVTR client software must have a Report Utility to allow vessel operators to view current and previous eVTRs. The Report Utility menu will present a selection of completed VTRs and will present a read-only display of VTR to the user. This display will be formatted, as close as possible, to the current paper VTR and display all of the information required by VTR regulation. Number these pages, e.g., 1 of 3, 2 of 3, etc. and show the trip identifier on each page and all other required information for a haul or sub-trip.

The Utilities menu must allow users to view a copy of any past VTR transmitted to NMFS over the past 12 months at a minimum. The software will present the list of all VTRs by trip identifier and date of sail.

The Report Utility menu must have the ability to export a PDF copy of the report to an external media such as a USB drive. After the external media is properly connected to the laptop, the Utility should save all selected eVTRs to a directory on the external media.

See sample eVTRs summaries, in Appendix E, for data collected at the haul-by-haul and sub-trip levels.

Type Approval of Third-Party eVTR Systems

Approval of third party eVTR applications will be granted if the software application meets the following criteria:

1. Meets NMFS-NE data collection requirements including coding and submission standards; and,
2. Correctly applies data collection business rules; and,
3. Can produce a data file in the specified standard format (Appendix A) that can be successfully loaded into NMFS-NE databases using existing load routines; and,
4. If designed to transmit data at sea (optional) , correctly applies transmission business rules and can be transmitted via one of the approved Vessel Monitoring System units (Boatracs, SkyMate, Thrane & Thrane); and,
5. Provides a mechanism by which critical support table updates can be performed without requiring revisions to the software code.

Vendors must submit the software application to NMFS for review and certification prior to use by vessel operators for electronic reporting in the northeast region.

Optional Features for ELB Client Software Systems

1. **Grade, market and unit of measure variances:** In certain situations, grade codes, market codes and units of measure differ between the catch and landing records. For example, scallops may be recorded as round (shell on) in the catch records, but reported

as meats in the landed record. Only those species, market, grade, unit of measure combinations included in the VERS_APPORTION_CONV_TO_CATCH are allowed to differ between catch and apportionment records.

2. **Dynamic data:** Supplemental data elements (dynamic data) will receive a two digit record type with the first digit corresponding to the parent record_type (e.g., supplemental effort data elements will have record type numbering of the format 2#, etc.). The second digit corresponds to the number of supplemental data "groups" collected. *Note at this point there are no plans to expand the collection beyond a single group so all accessory data elements should have a "1" in the second digit of the record_type.* Utilization of dynamic data must be prearranged with NMFS.

3. **Partial trip transmissions:** Any splitting of the file that is required to meet file size demands of transmission methods (e.g., transmissions using SkyMate) satellite email system should be split on whole efforts and/or landing records such that the parent record is transmitted with all of its children (i.e., all catch or apportion records for the effort or landing must be included). NMFS encourages each software vendor to discuss file size limitations directly with satellite communication service providers.
    a. Electronic logbook (ELB) records are locked once data are transmitted. This means that once catch records have been transmitted they cannot be deleted or updated through the ELB software. Changes to transmitted data must be made through the web portal. The only exception to this will be the following data elements in the trip record: trip notes, end_date and end_time.

    b. The end_date and end_time fields in the export file should be equal to the sail_date and sail_time until the trip has been ended. Equal sail and end dates indicate that a trip is still open and has not been completed.

    c. The header and trip record must be transmitted with each partial trip transmission. Record count columns are used to track the numbers of records sent and to ensure all records are received and loaded. See Appendix A for an example of an export file and the eVTR export file detailed data field/column descriptions

    d. For partial trip transmissions the data filename will be modified from the trip_id (e.g., 12345609051210.pgp) to trip_id_seq_num (e.g., 12345609051210_1.pgp). Whole trips (initial and retransmits) will retain the original trip_id format. Retransmission of partial trip fragments should retain the original sequence number.

Appendix A. Export File Field/Column Descriptions and Business Rules

The files format is quoted CSV (comma separated variable). Comments fields (both in trip notes and dynamic data) must not contain carriage returns. Fields underlined below are optional. If values for these fields are not included in the export file, the export file still needs to retain a placeholder for the field. Dynamic data records types are an exception. In the case of dynamic data, the entire record can be omitted from the export file if the application is not using dynamic data or only using some levels of dynamic data (e.g., trip-level dynamic data, but not effort, catch, landing or apportionment).

Export file description

header_record_type, program_code, source_version, original_transmission_date, original_transmission_time, transmission_date, transmission_time, effort_record_count_for_trip_fragment, landings_record_count_for_trip_fragment, total_effort_record_count_for_trip, total_landings_record_count_for_trip, operator_password

trip_record_type, trip_id, vessel_name, vessel_hull_id, vessel_permit_num, sail_port, sail_date, sail_time, end_port, end_date, end_time, trip_category, trip_activity_type, crew_size, num_anglers, operator_last_name, operator_first_name, operator_permit_num, trip_entry_date, trip_entry_time, trip_notes

trip_dynamic_record_type, dynamic_element_code, dynamic_data_value [record is optional]

effort_record_type, effort_num, accsp_gear_code, vtr_gear_code, mesh_size, gear_quantity, gear_size, mesh_type, start_set_date, start_set_time, end_set_date, end_set_time, start_haul_date, start_haul_time, end_haul_date, end_haul_time, start_set_lat, start_set_lon, end_set_lat, end_set_lon, start_haul_lat, start_haul_lon, end_haul_lat, end_haul_lon, loran_bearing1, loran_bearing2, area_code, depth, depth_uom, num_hauls, soak_hours, soak_mins, temp, effort_entry_date, effort_entry_time

effort_dynamic_record_type, dynamic_element_code, dynamic_data_value [record is optional]

catch_record_type, catch_num, species_code, hail_amount, disposition_code, catch_entry_date, catch_entry_time

catch_dynamic_record_type, dynamic_attribute_code, dynamic_data_value [record is optional]

landing_record_type, landing_num, land_port, land_date, land_time, land_entry_date, land_entry_time

landing_dynamic_record_type, dynamic_attribute_code, dynamic_data_value [record is optional]

apportion_record_type, appor_num, species_code, apport_amount, disposition_code, dealer_permit_num, issuing_agency, sold_date, appor_entry_date, appor_entry_time

apportion_dynamic_record_type, dynamic_attribute_code, dynamic_data_value [record is optional]

Export file example

0,1,FLDRS 2.0, 1/9/2008,20:23:24,1/10/2008,10:48:16,1,1,1,1,12345aA!
1,12345608010902,"Tennessee
Jed",123456,123456,2545000005,1/9/2008,02:17:22,2545000005,1/9/2008,20:23:24,1,0,5,0,
"OPERATOR","ELBTEST, O",10099999,1/9/2008,08:25:00,"ripped the belly out of flatnet on haul#2."
11,3,5000
11,4,2.45
2,1,092,OTF,6.5,1,100,,1/9/2008,06:16:32,1/9/2008,06:19:46,1/9/2008,07:54:02,1/9/2008,08:02:15,4131.5619 N,07040.4427 W,4131.5617 N,07040.4426 W,4131.5610 N,07040.4429 W,4131.5606 N,07040.4436 W,,,538,25,FA,1,1,34,,1/9/2008,08:19:07
21,10,280
21,23,2
21,24,9
21,113,2
3,1,172877UN01LB,250,011,1/9/2008,08:19:30
31,51,2
31,52,6
31,53,9
31,54,7
31,55,1
3,2,172735UN01LB,200,011,1/9/2008,08:19:58
3,3,172905UN01LB,50,110,1/9/2008,08:20:07
3,4,172873UN01LB,40,110,1/9/2008,08:20:15
4,1,2545000005,1/9/2008,14:23:24,1/9/2008,19:23:42
5,1,172877UN01LB,250,001,1393,NMFS-NER,1/9/2008,1/9/2008,19:23:43
5,2,172735UN01LB,200,001,1393,NMFS-NER,1/9/2008,1/9/2008,19:23:43

Appendix A cont'd eVTR Export File Detailed Data Field/Column Descriptions

Record Type	Export file field name	Description	Data Type	Scale	Precision	Required	Support Table
Header	header_record_type	Denotes that the record is the header record (always = 0)	number	1	0	yes	record types (raw_record_types)
Header	program_code	The code for the data collection program/protocol used on the trip	varchar	4		yes	programs (vers_programs)
Header	source_version	The name of the logbook software application and software version	varchar	20		yes	report sources (fvtr_report_sources)
Header	original_transmission_date	The date (UTC) that the trip file was originally transmitted	date			yes	
Header	original_transmission_time	The time (UTC) that the trip file was originally transmitted	time			yes	
Header	transmission_date	The date (UTC) that trip file was retransmitted (if there was no retransmission this will be the same as the original_transmission_date)	date			yes	
Header	transmission_time	The time (UTC) that trip file was retransmitted (if there was no retransmission this will be the same as the original_transmission_time)	time			yes	
Header	effort_record_count_for_trip_partial	The number of effort records included in the partial trip transmission	number	3	0	yes	
Header	landings_record_count_for_trip_partial	The number of landing records included in the partial trip transmission	number	3	0	yes	
Header	total_effort_record_count_for_trip	The total number of effort records that exist for the trip at the time of transmission	number	3	0	yes	
Header	total_landings_record_count_for_trip	The total number of landing records that exist for the trip at the time of transmission	number	3	0	yes	
Header	operator_password	The operator provided password for eVTR signature	varchar	8		yes	
Trip	trip_record_type	Denotes that the record is the trip record (always = 1)	number	1	0	yes	record types (raw_record_types)
Trip	trip_id	The unique trip identifier of the trip	number	14	0	yes	
Trip	vessel_name	The name of the vessel	varchar	30		no	vessels (fvtr_vessels)
Trip	vessel_hull_id	The U.S. Coast Guard registration number or state registration number	number	10	0	yes	vessels (fvtr_vessels)
Trip	vessel_ permit_num	The vessel's federal permit number	number	6	0	yes	vessels (fvtr_vessels)
Trip	sail_port	The port code for the port the vessel sailed from at the start of the trip (this is a concatenation of the fips_state_code||fips_place_code||fips_county_code contained the in the 'ports' support table)	varchar	10		yes	ports (fvtr_ports)
Trip	sail_date	The date (UTC) when the vessel started the trip	date			yes	
Trip	sail_time	The time (UTC) when the vessel started the trip (seconds are not required)	time			yes	
Trip	end_port	The port code for the port where the vessel ended the trip (the last port of a trip if there are multiple ports; this is a concatenation of the fips_state_code||fips_place_code||fips_county_code contained in the ~~in~~ the 'port' support table)	varchar	10		yes	ports (fvtr_ports)
Trip	end _date	The date (UTC) when the vessel ended the trip	date			yes	

Record Type	Export file field name	Description	Data Type	Scale	Precision	Required	Support Table
Trip	end_time	The time (UTC) when the vessel ended the trip (seconds are not required)	time			yes	
Trip	trip_category	The type of trip (commercial, party or charter)	number	1	0	yes	trip categories (fvtr_trip_categories)
Trip	trip_activity_type	Defines whether there was positive fishing effort on the trip (i.e., fishing effort occurred) or whether there was no fishing effort expended on the trip (set-only trip, aborted trips, carrier vessel).	Number	2	0	Yes	trip activities (fvtr_trip_activity_types)
Trip	crew_size	The number of crew on board the vessel including the captain	number	2	0	yes	
Trip	num_anglers	The number of anglers on board the vessel (should only be populated when the trip is party or charter)	number	3	0	yes for party of charter trips (null for commercial trips)	
Trip	operator_last_name	The last name of the vessel operator	varchar	35		no	operators (fvtr_operators)
Trip	operator_first_name	The first name of the vessel operator	varchar	35		no	operators (fvtr_operators)
Trip	operator_permit_num	The vessel operator's federal permit number	number	8	0	yes	operators (fvtr_operators)
Trip	trip_entry_date	The date (UTC) when the trip record was created or last edited	date			no	
Trip	trip_entry_time	The time (UTC) when the trip record was created or last edited	time			no	
Trip	trip_notes	Miscellaneous comments the operator wants to record in the logbook	varchar	255		no (default is null)	
Trip	trip_dynamic_record_type	Denotes that the record is a trip dynamic data element (always = 11)	number	2	0	no (do not include in export file if not collected)	element table (vers_element_table)
Trip	trip_dynamic_element_code	The dynamic data element code	varchar	4		no (do not include in export file if not collected)	elements (vers_elements)
Trip	trip_dynamic_data_value	The dynamic data value	varchar	255		no (do not include in export file if not collected)	
Effort	effort_record_type	Denotes that the record is a effort record (always = 2)	number	1	0	yes	record types (raw_record_types)
Effort	effort_num	The effort record sequence number (unique in a trip)	number	2	0	yes	
Effort	accsp_gear_code	The corresponding ACCSP gear code for the gear used on the fishing effort	varchar	3		yes	gears (fvtr_gear_codes)

Effort	vtr_gear_code	The corresponding VTR gear code for the gear used on the fishing effort (may be null for some gear types)	varchar	3		yes (may be null for some gear types - consult gear support table)	gears (fvtr_gear_codes)
Effort	mesh_size	The size of the mesh or ring used on the fishing gear (average of all hauls if reporting at a subtrip level, may be null for some gear types)	number	6	3	yes (may be null for some gear types - consult gear support table)	
Effort	gear_quantity	The number of pieces of gear fished simultaneously (average of all hauls if reporting at a subtrip level, may be null for some gear types)	number	4		yes (may be null for some gear types - consult gear support table)	
Effort	gear_size	The size of the gear being fished (average of all hauls if reporting at a subtrip level, may be null for some gear types)	number	6	1	yes (may be null for some gear types - consult gear support table)	
Effort	mesh_type	The type of mesh (diamond or square) being fished on trawl or gillnet gear (may be null for some gear types)	varchar	1		No (may be null for some gear types - consult gear support table)	mesh type (fvtr_mesh_types)
Effort	start_set_date	The date (UTC) when the gear is first placed in the water at the start of a fishing effort	date			no	gear program rules (vers_gear_program_rules)
Effort	start_set_time	The time (UTC) when the gear is first placed in the water at the start of a fishing effort	time			no	gear program rules (vers_gear_program_rules)
Effort	end_set_date	The date (UTC) when setting the gear has stopped and the gear begins to fish	date			no	gear program rules (vers_gear_program_rules)
Effort	end_set_time	The time (UTC) when setting the gear has stopped and the gear begins to fish	time			no	gear program rules (vers_gear_program_rules)
Effort	start_haul_date	The date (UTC) when hauling the gear starts and the gear stops fishing	date			no (unless recording at the haul-by-haul level)	gear program rules (vers_gear_program_rules)
Effort	start_haul_time	The time (UTC) when hauling the gear starts and the gear stops fishing	time			no (unless recording at the haul-by-haul level)	gear program rules (vers_gear_program_rules)

Effort	end_haul_date	The date (UTC) when the gear has been completely hauled and is back aboard the vessel	date			no	gear program rules (vers_gear_program_rules)
Effort	end_haul_time	The time (UTC) when the gear has been completely hauled and is back aboard the vessel	time			no	gear program rules (vers_gear_program_rules)
Effort	start_set_lat	The latitude (UTC) when the gear is first placed in the water at the start of a fishing effort (decimal minutes - ddmm.mmmm)	number	11	6	no	gear program rules (vers_gear_program_rules)
Effort	start_set_lon	The longitude (UTC) when the gear is first placed in the water at the start of a fishing effort (decimal minutes - dddmm.mmmm)	number	11	6	no	gear program rules (vers_gear_program_rules)
Effort	end_set_lat	The latitude (UTC) when setting the gear has stopped and the gear begins to fish (decimal minutes - ddmm.mmmm)	number	11	6	no	gear program rules (vers_gear_program_rules)
Effort	end_set_lon	The longitude (UTC) when setting the gear has stopped and the gear begins to fish (decimal minutes - dddmm.mmmm)	number	11	6	no	gear program rules (vers_gear_program_rules)
Effort	start_haul_lat	The latitude (UTC) when hauling the gear starts and the gear stops fishing (decimal minutes - ddmm.mmmm; if reporting at the subtrip-level this is the average position of all efforts within a subtrip)	number	11	6	yes (unless loran_bearing1 and loran_bearing2 are provided)	gear program rules (vers_gear_program_rules)
Effort	start_haul_lon	The longitude (UTC) when hauling the gear starts and the gear stops fishing (decimal minutes - dddmm.mmmm; if reporting at the subtrip-level this is the average position of all efforts within a subtrip)	number	11	6	yes (unless loran_bearing1 and loran_bearing2 are provided)	gear program rules (vers_gear_program_rules)
Effort	end_haul_lat	The latitude (UTC) when the gear has been completely hauled and is back aboard the vessel (decimal minutes - ddmm.mmmm)	number	11	6	no	gear program rules (vers_gear_program_rules)
Effort	end_haul_lon	The longitude (UTC) when the gear has been completely hauled and is back aboard the vessel (decimal minutes - dddmm.mmmm)	number	11	6	no	gear program rules (vers_gear_program_rules)
Effort	loran_bearing1	The first loran chain bearing corresponding to the average position of all efforts within a subtrip (not collected when reporting at the haul-by-haul level)	varchar	12		no (unless start_set_lat and start_set_lon are not provided)	
Effort	loran_bearing2	The second loran chain bearing corresponding to the average position of all efforts within a subtrip (not collected when reporting at the haul-by-haul level)	varchar	12		no (unless start_set_lat and start_set_lon are not provided)	
Effort	area_code	The statistical area in which the fishing effort occurred (derived from the position recorded in start_haul_lat and start_haul_lon or loran_bearing1 and loran_bearing2) This is the start of the haulback.	varchar	3		yes	statistical areas (fvtr_fishing_areas)
Effort	depth	The fishing depth of the gear	number	4	0	yes	

Effort	depth_uom	The unit of measure corresponding to the depth measurement	varchar	2		yes	units of measure (fvtr_units_of_measure)
Effort	num_hauls	The number of hauls contained in the subtrip (always equals 1 when reporting at the haul-by-haul level)	number	3	0	yes	
Effort	soak_hours	The hour component of the soak/haul duration of the fishing effort (average of all hauls if reporting at a subtrip level)	number	2	0	yes	
Effort	soak_mins	The minute component of the soak/haul duration of the fishing effort (average of all hauls if reporting at a subtrip level)	number	2	0	yes	
Effort	temp	The water temperature (degrees C)	number	5	2	no	
Effort	effort_entry_date	The date (UTC) when the effort record was created or last edited	date			no	
Effort	effort_entry_time	The time (UTC) when the effort record was created or last edited	time			no	
Effort	effort_dynamic_record_type	Denotes that the record is a effort dynamic data element (always = 21)	number	2	0	no (do not include in export file if not collected)	element table (vers_element_table)
Effort	effort_dynamic_element_code	The dynamic data element code	varchar	4		no (do not include in export file if not collected)	elements (vers_elements)
Effort	effort_dynamic_data_value	The dynamic data value	varchar	255		no (do not include in export file if not collected)	
Catch	catch_record_type	Denotes that the record is a catch record (always = 3)	number	1	0	yes	record types (raw_record_types)
Catch	catch_num	The catch record sequence number (unique in a trip and effort)	number	2	0	yes	
Catch	species_code	The species code (this is a concatenation of the species_itis||market_code||grade_code||species_uom contained in the species support table)	varchar	12		yes	species (fvtr_species_codes)
Catch	hail_amount	The amount of species caught	number	8	0	yes	
Catch	disposition_code	The disposition of the caught fish	varchar	3		yes	dispositions (fvtr_dispositions)
Catch	catch_entry_date	The date (UTC) when the catch record was created or last edited	date			no	
Catch	catch_entry_time	The time (UTC) when the catch record was created or last edited	time			no	
Catch	catch_dynamic_record_type	Denotes that the record is a catch dynamic data element (always = 31)	number	2	0	no (do not include in export file if not collected)	element table (vers_element_table)

Catch	catch_dynamic_attribute_code	The dynamic data element code	varchar	4		no (do not include in export file if not collected)	elements (vers_elements)
Catch	catch dynamic_data_value	The dynamic data value	varchar	255		no (do not include in export file if not collected)	
Landing	landing_record_type	Denotes that the record is a landing record (always = 4)	number	1	0	yes	record types (raw_record_types)
Landing	landing_num	The landing record sequence number (unique in a trip)	number	2	0	yes	
Landing	land_port	The port code for the port where the vessel landed fish (this is a concatenation of the fips_state_code||fips_place_code||fips_county_code contained the in the 'port' support table)	varchar	10		yes	ports (fvtr_ports)
Landing	land_date	The date (UTC) when the vessel landed (multiple ports of landing allowed per trip)	date			yes	
Landing	land_time	The time (UTC) when the vessel landed (multiple ports of landing allowed per trip; seconds are not required)	time			yes	
Landing	land_entry_date	The date (UTC) when the landing record was created or last edited	date			no	
Landing	land_entry_time	The time (UTC) when the landing record was created or last edited	time			no	
Landing	landing_dynamic_record_type	Denotes that the record is a landing dynamic data element (always = 41)	number	2	0	no (do not include in export file if not collected)	element table (vers_element_table)
Landing	landing_dynamic_attribute_code	The dynamic data element code	varchar	4		no (do not include in export file if not collected)	elements (vers_elements)
Landing	landing_dynamic_data_value	The dynamic data value	varchar	255		no (do not include in export file if not collected)	
Apportionment	apportion_record_type	Denotes that the record is an apportionment record (always = 5)	number	1	0	yes	record types (raw_record_types)
Apportionment	appor_num	The apportionment record sequence number (unique in a trip and landing)	number	2	0	yes	
Apportionment	species_code	The species code (this is a concatenation of the species_itis||market_code||grade_code||species_uom contained in the species support table)	varchar	12		yes	species (fvtr_species_codes)
Apportionment	apport_amount	The amount of species sold to the assigned dealer	number	8	0	yes	

Apportionment	disposition_code	The disposition of the landed fish (if the dealer is in the maps dealer to disposition table, then the disposition must be set to the specified disposition)	varchar	3		yes	dispositions (fvtr_dispositions)/map dealers to disposition (fvtr_map_dealers_to_dispo)
Apportionment	dealer_permit_num	The seafood dealer's permit number	varchar	15		yes	dealers (fvtr_dealers)
Apportionment	issuing_agency	The issuing agency of the seafood dealer permit	varchar	30		yes	dealers (fvtr_dealers)
Apportionment	sold_date	The date when the transaction between the seafood dealer and vessel occurred (local date)	date			yes	
Apportionment	appor_entry_date	The date (UTC) when the apportionment record was created or last edited	date			no	
Apportionment	appor_entry_time	The time (UTC) when the apportionment record was created or last edited	time			no	
Apportionment	apportion_dynamic_record_type	Denotes that the record is an apportionment dynamic data element (always = 51)	number	2	0	no (do not include in export file if not collected)	element table (vers_element_table)
Apportionment	apportion_dynamic_attribute_code	The dynamic data element code	varchar	4		no (do not include in export file if not collected)	elements (vers_elements)
Apportionment	apportion_dynamic_data_value	The dynamic data value	varchar	255		no (do not include in export file if not collected)	

Appendix B : Recommended Support Tables

ACCSP_SAFIS_Grade_Categories	List of species grade codes used in the ACCSP commercial fisheries landings data collection system.
ACCSP_SAFIS_Market_Categories	List of species grade codes used in the ACCSP commercial fisheries landings data collection system.
FVTR_Dealers	List of Federally permitted dealers in the northeast.
FVTR_Dispositions	Codes to indicate the disposition of the catch for each species.
FVTR_Fishing_Areas	United States statistical areas to indicate where fish are caught.
FVTR_Gear_Codes	List of gears by code and description.
FVTR_Location_To_Area	Used to assign a ten minute square to statistical area.
FVTR_Mesh_Type	List of mesh types for nets.
FVTR_Operators	List of federally permitted vessel operators.
FVTR_Ports	List of ports by code and name.
FVTR_Report_Sources	Codes to indicate the type or level of reporting through the tool selected
FVTR_Species_Codes	List of acceptable species, market, grade and unit of measure combinations used to collect fisheries data.
FVTR_Trip_Activity_Types	Code to indicate the nature of the fishing activity on the trip, e.g., normal (positive), set-only, transiting, aborted due to weather, aborted due to mechanical malfunction, carrier vessel.
FVTR_Trip_Categories	Codes to indicate the trip categories, i.e. commercial, party, or charter
FVTR_Units_of_Measure	Units of measure abbreviations used in the collection of the data.
FVTR_Vessels	List of federally permitted fishing vessels in the northeast.

Appendix B. Support Tables, cont'd

Raw_Record_Types	List of the record types in the data export file.
VERS_Apportion_Conv_to_Catch	List of species, market, grade and unit of measure combinations that are allowed to vary between catch and apportionment records.
VERS_Elements	List of the vessel electronic reporting dynamic data elements.
VERS_Element_Levels	List of the vessel electronic reporting dynamic data record types indicating the level of collection.
VERS_Gear_Program_Rules	List of rules for each gear indicating the parameters to collect by program.
VERS_Programs	List of programs under which the vessel is collecting data.

Appendix C. Glossary

ACCSP: Atlantic States Coastal Cooperative Statistics Program

Apportionment: The assignment of the landed catch to seafood dealers.

Effort Start Set: The time when the gear is first placed in the water and the setting activity commences.

Effort End Set: The time when the gear is fully deployed and begins to fish.

Effort Start Haul: The time when retrieval of the gear begins and at least part of the gear ceases to fish with full effectiveness.

Effort End Haul: The time when the gear is fully retrieved and is aboard the vessel.

Fishing Trip: The period of time from when a fishing vessel leaves port with an empty hold to attempt the harvest of fish until the offload or transfer of ***all*** fish/fish product from those harvesting attempts; or the period of time from when a fishing vessel leaves port with an empty hold and returns to port after not successfully having caught any fish.

FLDRS: Fisheries Landings Data Reporting System is the electronic logbook system developed by the NMFS, Northeast Fisheries Science Center.

Haul-by-Haul: A method of recording fishing effort where each effort and its associated catch is recorded individually in the data. This is the finest level of reporting allowed and is optional.

SAFIS: Standard Atlantic Fisheries Information System is the system used by ACCSP to collect and process commercial fisheries statistics data.

Sub-trip: A method of recording fishing effort where efforts are aggregated within a fishing trip for each unique statistical area, gear type, and gear configuration (mesh size) fished on a given trip. This is the coarsest level of vessel reporting allowed under federal regulations.

Ten Minute Square: Refers to a single cell or 'square' within a gridded partition of geographic locations. The dimension of each cell is ten minutes of latitude by ten minutes of longitude.

Universal Time Coordinated (UTC): The international time standard (sometimes used synonymously with Greenwich Mean Time (GMT))

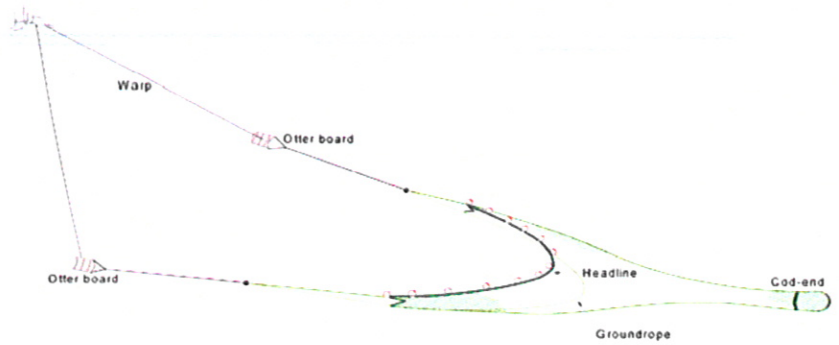
Varchar: Variable length format (data type) for character data values.

Appendix D. Diagram of Gear Effort Events, Set and Haul

Mobile Gear Effort Events

- There are four discrete events associated with any fishing effort:
  - Mobile gear (e.g., otter trawl, midwater trawl, scallop dredge)

Event	1	2	3	4
Activity	**Start of the set**	**End of the set**	**Start of the haul back**	**End of the haul back**
Definition	Gear is first deployed	Deployment of the gear is finished, gear if effectively fishing	Retrieval of the gear begins	Retrieval hauling of the gear is complete
Mobile gear activity	Trawl/dredge first hits the water	Winch brake lock applied	Winch brake released and retrieval of net/dredge begins	Trawl/dredge out of the water

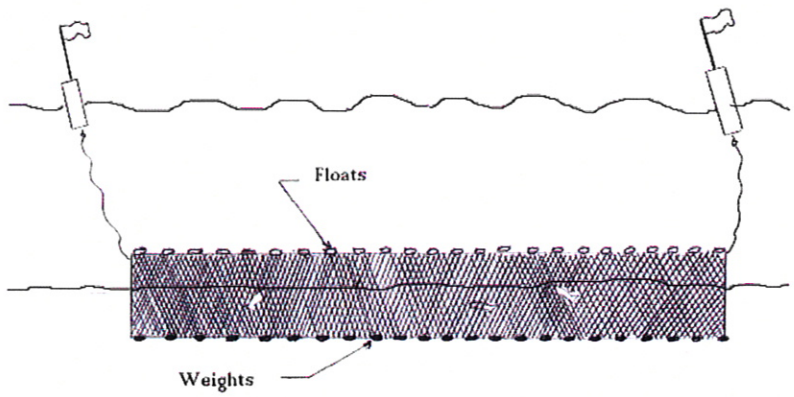


Appendix D. Diagram of Gear Effort Events, Set and Haul, cont'd

Fixed Gear Effort Events

- There are four discrete events associated with any fishing effort:
  - Fixed gear (e.g., longline, gillnet, pot gear)

Event	1		2		3		4
Activity	**Start of the set**		**End of the set**		**Start of the haul back**		**End of the haul back**
Definition	Gear is first deployed		Deployment of the gear is finished, gear if effectively fishing		Retrieval of the gear begins		Retrieval/hauling of the gear is complete
Fixed gear activity	First anchor of the set is sent overboard		Final anchor/highflier of the set is sent over		Retrival of one end of the set begins		Entire set has been hauled (may or may not be back on board the vessel



Appendix E. Sample eVTR Summary Onboard Vessel

Subtrip Summary (1 subtrip, 3 pages)

Fishing Vessel Trip Report (ELB)

Subtrip #1

VESSEL NAME	USCG DOC or STATE REG NO	VESSEL PERMIT NUMBER	TRIP IDENTIFIER
TENNESSEE JED	123456	123456	12345611070714

DATE/TIME SAILED	PORT/STATE SAILED	TRIP TYPE	NO. of CREW	NO. of ANGLERS
DATE: 7/7/2011 TIME: 10:03:37 AM	Woods Hole, MA	Commercial	3	0

GEAR TYPE	MESH/RING SIZE	QTY of GEAR	SIZE of GEAR	NO. of HAULS
Otter Trawl Bottom, Fish	6.5 Diamond	1	210	4

FISHING EFFORT	DATE	TIME	FISHING EFFORT	LATITUDE	LONGITUDE
START of SET			START of SET		
END of SET			END of SET		
START of HAUL			START of HAUL	4131.5600 N	07040.4429 W
END of HAUL			END of HAUL		

STATISTICAL AREA	TOW/SOAK TIME (HH:MM)	DEPTH	OPERATOR NAME and PERMIT #
055	03:30	20 Fathoms	OPERATOR, ELBTEST O 10099999

NOTES

SPECIES DESCRIPTION	AMOUNT KEPT		DISPOSITION
Cod, Atlantic - Dressed - Unknown	1500	LB	Kept, Disposition Unknown
Haddock - Gutted - Unknown	300	LB	Kept, Disposition Unknown
Pollock, Atlantic - Drawn - Unknown	150	LB	Kept, Disposition Unknown
Flounder, Winter - Round - Unknown	60	LB	Kept, Disposition Unknown
Flounder, Yellowtail - Round - Unknown	60	LB	Kept, Disposition Unknown
Flounder, Witch (Gray Sole) - Round - Unknown	20	LB	Kept, Disposition Unknown
Goosefish - Livers - Unknown	10	LB	Kept, Disposition Unknown
Goosefish - Tails - Unknown	40	LB	Kept, Disposition Unknown

SPECIES DESCRIPTION	AMOUNT DISCARDED		DISPOSITION
Cod, Atlantic - Round - Unknown	10	LB	Discard, Reason Not Specified
Haddock - Round - Unknown	20	LB	Discard, Reason Not Specified
Pollock, Atlantic - Round - Unknown	5	LB	Discard, Reason Not Specified
Flounder, Fourspot - Round - Unknown	20	LB	Discard, Reason Not Specified
Flounder, Sand Dab (Windowpane) - Round - Unknown	40	LB	Discard, Reason Not Specified
Flounder, Yellowtail - Round - Unknown	4	LB	Discard, Reason Not Specified
Dogfish, Spiny - Round - Unknown	200	LB	Discard, Reason Not Specified
Skate, Little/Winter Mix - Round - Unknown	100	LB	Discard, Reason Not Specified

Fishing Vessel Trip Report (ELB)

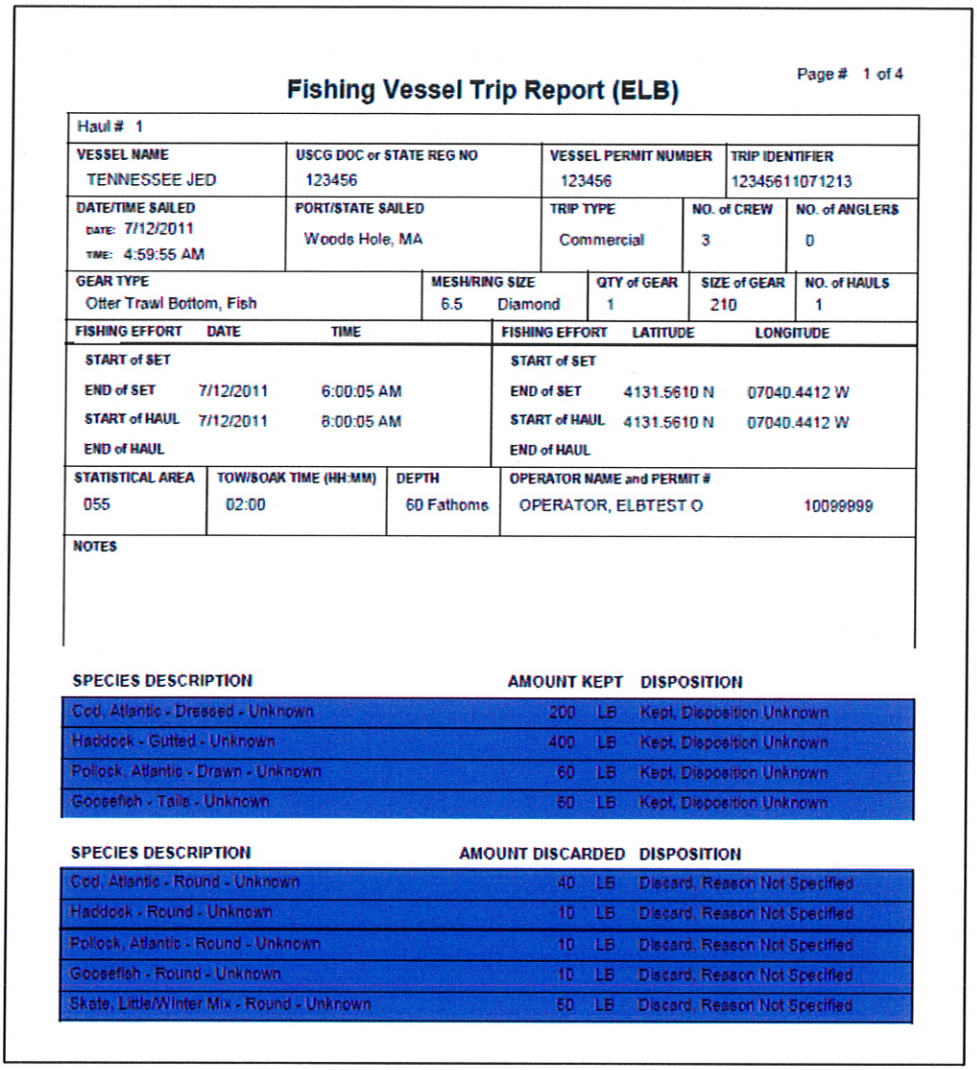
PORT and STATE LANDED	DATE and TIME LANDED
Woods Hole MA	7/7/2011 10:06:55 AM

SPECIES DESCRIPTION \ DISPOSITION	QTY LANDED		DEALER NAME	DATE SOLD
Cod, Atlantic - Dressed - Unknown Kept, Sold For Food	1500	LB	Atlantic Coast Seafood Inc	7/7/2011
Flounder, Winter - Round - Unknown Kept, Sold For Food	60	LB	Atlantic Coast Seafood Inc	7/7/2011
Flounder, Witch (Gray Sole) - Round - Unknown Kept, Sold For Food	20	LB	Atlantic Coast Seafood Inc	7/7/2011
Flounder, Yellowtail - Round - Unknown Kept, Sold For Food	80	LB	Atlantic Coast Seafood Inc	7/7/2011
Goosefish - Livers - Unknown Kept, Sold For Food	10	LB	Atlantic Coast Seafood Inc	7/7/2011
Goosefish - Tails - Unknown Kept, Sold For Food	40	LB	Atlantic Coast Seafood Inc	7/7/2011
Haddock - Gutted - Unknown Kept, Sold For Food	300	LB	Atlantic Coast Seafood Inc	7/7/2011
Pollock, Atlantic - Drawn - Unknown Kept, Sold For Food	150	LB	Atlantic Coast Seafood Inc	7/7/2011

Fishing Vessel Trip Report (ELB)

SPECIES DESCRIPTION	TOTAL AMOUNT DISCARDED
Cod, Atlantic - Round - Unknown	10 LB
Dogfish, Spiny - Round - Unknown	200 LB
Flounder, Fourspot - Round - Unknown	20 LB
Flounder, Sand Dab (Windowpane) - Round - Unknown	40 LB
Flounder, Yellowtail - Round - Unknown	4 LB
Haddock - Round - Unknown	20 LB
Pollock, Atlantic - Round - Unknown	5 LB
Skate, Little/Winter Mix - Round - Unknown	100 LB

Haul-by-Haul Summary (2 hauls, 4 pages)



Page # 1 of 4

Fishing Vessel Trip Report (ELB)

Haul # 1

VESSEL NAME	USCG DOC or STATE REG NO	VESSEL PERMIT NUMBER	TRIP IDENTIFIER
TENNESSEE JED	123456	123456	12345611071213

DATE/TIME SAILED	PORT/STATE SAILED	TRIP TYPE	NO. of CREW	NO. of ANGLERS
DATE: 7/12/2011 TIME: 4:59:55 AM	Woods Hole, MA	Commercial	3	0

GEAR TYPE	MESH/RING SIZE	QTY of GEAR	SIZE of GEAR	NO. of HAULS
Otter Trawl Bottom, Fish	6.5 Diamond	1	210	1

FISHING EFFORT	DATE	TIME	FISHING EFFORT	LATITUDE	LONGITUDE
START of SET			START of SET		
END of SET	7/12/2011	6:00:05 AM	END of SET	4131.5610 N	07040.4412 W
START of HAUL	7/12/2011	8:00:05 AM	START of HAUL	4131.5610 N	07040.4412 W
END of HAUL			END of HAUL		

STATISTICAL AREA	TOW/SOAK TIME (HH:MM)	DEPTH	OPERATOR NAME and PERMIT #
055	02:00	60 Fathoms	OPERATOR, ELBTEST O 10099999

NOTES

SPECIES DESCRIPTION	AMOUNT KEPT		DISPOSITION
Cod, Atlantic - Dressed - Unknown	200	LB	Kept, Disposition Unknown
Haddock - Gutted - Unknown	400	LB	Kept, Disposition Unknown
Pollock, Atlantic - Drawn - Unknown	60	LB	Kept, Disposition Unknown
Goosefish - Tails - Unknown	50	LB	Kept, Disposition Unknown

SPECIES DESCRIPTION	AMOUNT DISCARDED		DISPOSITION
Cod, Atlantic - Round - Unknown	40	LB	Discard, Reason Not Specified
Haddock - Round - Unknown	10	LB	Discard, Reason Not Specified
Pollock, Atlantic - Round - Unknown	10	LB	Discard, Reason Not Specified
Goosefish - Round - Unknown	10	LB	Discard, Reason Not Specified
Skate, Little/Winter Mix - Round - Unknown	50	LB	Discard, Reason Not Specified

Fishing Vessel Trip Report (ELB)

Haul # 2

VESSEL NAME	USCG DOC or STATE REG NO	VESSEL PERMIT NUMBER	TRIP IDENTIFIER
TENNESSEE JED	123456	123456	12345611071213

DATE/TIME SAILED	PORT/STATE SAILED	TRIP TYPE	NO. of CREW	NO. of ANGLERS
DATE: 7/12/2011 TIME: 4:59:55 AM	Woods Hole, MA	Commercial	3	0

GEAR TYPE	MESH/RING SIZE	QTY of GEAR	SIZE of GEAR	NO. of HAULS
Otter Trawl Bottom, Fish	6.5 Diamond	1	210	1

FISHING EFFORT	DATE	TIME
START of SET		
END of SET	7/12/2011	9:00:31 AM
START of HAUL	7/12/2011	11:00:33 AM
END of HAUL		

FISHING EFFORT	LATITUDE	LONGITUDE
START of SET		
END of SET	4131.5610 N	07040.4412 W
START of HAUL	4131.5603 N	07040.4428 W
END of HAUL		

STATISTICAL AREA	TOW/SOAK TIME (HH:MM)	DEPTH	OPERATOR NAME and PERMIT #
055	02:00	67 Fathoms	OPERATOR, ELBTEST O 10099999

NOTES

SPECIES DESCRIPTION	AMOUNT KEPT		DISPOSITION
Cod, Atlantic - Dressed - Unknown	400	LB	Kept, Disposition Unknown
Haddock - Gutted - Unknown	50	LB	Kept, Disposition Unknown
Pollock, Atlantic - Drawn - Unknown	60	LB	Kept, Disposition Unknown
Flounder, Yellowtail - Round - Unknown	10	LB	Kept, Disposition Unknown
Flounder, Witch (Gray Sole) - Round - Unknown	10	LB	Kept, Disposition Unknown

SPECIES DESCRIPTION	AMOUNT DISCARDED		DISPOSITION
Cod, Atlantic - Round - Unknown	10	LB	Discard, Reason Not Specified
Haddock - Round - Unknown	20	LB	Discard, Reason Not Specified
Flounder, Witch (Gray Sole) - Round - Unknown	4	LB	Discard, Reason Not Specified

Fishing Vessel Trip Report (ELB)

PORT and STATE LANDED	DATE and TIME LANDED
Woods Hole MA	7/12/2011 2:01:43 PM

SPECIES DESCRIPTION \ DISPOSITION	QTY LANDED		DEALER NAME	DATE SOLD
Cod, Atlantic - Dressed - Unknown Kept, Sold For Food	600	LB	Atlantic Coast Seafood Inc	7/12/2011
Flounder, Witch (Gray Sole) - Round - Unknown Kept, Sold For Food	10	LB	Atlantic Coast Seafood Inc	7/12/2011
Flounder, Yellowtail - Round - Unknown Kept, Sold For Food	10	LB	Atlantic Coast Seafood Inc	7/12/2011
Goosefish - Tails - Unknown Kept, Sold For Food	50	LB	Atlantic Coast Seafood Inc	7/12/2011
Haddock - Gutted - Unknown Kept, Sold For Food	450	LB	Atlantic Coast Seafood Inc	7/12/2011
Pollock, Atlantic - Drawn - Unknown Kept, Sold For Food	140	LB	Atlantic Coast Seafood Inc	7/12/2011

Fishing Vessel Trip Report (ELB)

SPECIES DESCRIPTION	TOTAL AMOUNT DISCARDED
Cod, Atlantic - Round - Unknown	50 LB
Flounder, Witch (Gray Sole) - Round - Unknown	4 LB
Goosefish - Round - Unknown	10 LB
Haddock - Round - Unknown	30 LB
Pollock, Atlantic - Round - Unknown	10 LB
Skate, Little/Winter Mix - Round - Unknown	50 LB

Appendix F: EVTR Fatal and Informative Errors

During File Upload

LOAD_STATUS	LOAD_STATUS_DESCR
A	Trip file authentication failure (incorrect operator/PIN combination)
M	Multiple (duplicate), trip not reloaded
Z	Unzip failure
T	Corrupt file failure
V	Source version failure

Load Status 'A' trips will load into the database tables others will not.

Error Codes

Level	Description
F	End > Today+1
F	End < Sail
F	End < Max Land
F	End < Max Effort
F	Date < Sail or > End
F	Sold < Sail
F	Missing required value
F	End Set < Start Set
F	Start Haul < End Set
F	End Haul < Start Haul
F	Invalid data type
F	Invalid lookup for field
F	Invalid format for field
F	Invalid field length
F	Missing mandatory field
F	Incomplete trip missing (A valid trip must have a trip, effort, catch and landing record.)
F	Invalid field range
F	Invalid point location
F	Invalid subtrip (use to validate a catch with an unknown effort back to a gear combination)
F	Unmatched species (species in kept catch must be apportioned)
F	Invalid water haul w/ species (If an effort has been defined as a water haul (no catch) then there can be no species assigned to that effort.)
I	Sold > End+7 days
I	Check field range (This is informational and suggested to check afield range but not a fatal error (Invalid field range).

	Mesh size for certain gear type should be between the min and max.)
I	Non-matching stat area
I	Check grade species discard (only certain grades should be discarded, round not gutted, for example.)

Appendix F: EVTR Fatal and Informative Errors, cont'd

Errors by column name that incorporate above error coding system:

trip_id	F	Invalid length (14)
trip_id	F	Invalid number
vp_program_code	F	Invalid program code (from vers_programs)
report_source	F	Invalid report source (from fvtr_report_sources)
source_version	F	Invalid source version (from fvtr_source_versions)
sail_port	F	Invalid not null
sail_port	F	Invalid length (10)
sail_port	F	Invalid port (from fvtr_ports)
sail_date	F	Invalid not null
sail_date	F	Invalid format (MM/DD/YYYY)
sail_time	F	Invalid not null
sail_time	F	Invalid format (HH24:MI[:SS])
end_port	F	Invalid length (10)
end_port	F	Invalid port (from fvtr_ports)
end_date	F	Invalid not null
end_date	F	Invalid format (MM/DD/YYYY)
trip_notes	F	Invalid length (1000)
operator_permit_num	F	Invalid not null
operator_permit_num	F	Invalid number
operator_permit_num	F	Invalid operator permit num (from fvtr_operators)
trip_category	F	Invalid not null
trip_category	F	Invalid number
trip_category	F	Invalid trip category (from fvtr_trip_categories)
crew_size	F	Invalid not null
crew_size	I	Invalid range (1-15)
crew_size	F	Invalid number
num_anglers	F	Invalid not null (only party and charter trip type)
num_anglers	F	Invalid null (if entered for commercial trip type)
num_anglers	F	Invalid number
num_anglers	I	Invalid range (120)
vessel_permit_num	F	Invalid not null
vessel_permit_num	F	Invalid length (> 6)
vessel_permit_num	F	Invalid vessel_hull_id/vessel_permit_num (from fvtr_vessels)
vessel_hull_id	F	Invalid not null
vessel_hull_id	F	Invalid length (>10)
effort_num	F	Invalid length (>3)
area_code	F	Invalid not null
area_code	F	Invalid area code (from fvtr_fishing_areas)
area_code	I	Position does not match area
accsp_gear_code|| vtr_gear_code	F	Invalid gear code (from fvtr_gear_codes)
mesh_size	F	Invalid not null (depends on gear type)
mesh_size	F	Invalid length (>6)

mesh_size	F	Invalid format (99.999)
mesh_size	I	Invalid range (depends on gear type)
mesh_type	F	Invalid not null (only for haul by haul and certain gear types)
mesh_type	F	Invalid mesh type (from fvtr_mesh_types)
gear_quantity	F	Invalid not null (depends on gear type)
gear_quantity	F	Invalid length (>4)
gear_quantity	F	Invalid number
gear_quantity	F	Invalid format (9999)
gear_quantity	I	Invalid range (depends on gear type)
gear_size	F	Invalid not null (depends on gear type)
gear_size	F	Invalid length (>6)
gear_size	F	Invalid number
gear_size	F	Invalid format (9999.9)
gear_size	I	Invalid range (depends on gear type)
num_hauls	F	Invalid not null (depends on gear type)
num_hauls	F	Invalid length (>3)
num_hauls	F	Invalid number
num_hauls	F	Invalid format (999)
num_hauls	I	Invalid range (depends on gear type)
start_haul_lat	F	Invalid not null
start_haul_lat	F	Invalid length (11)
start_haul_lat	F	Invalid direction (N, S)
start_haul_lat	F	Invalid number
start_haul_lat	F	Invalid format (9999.9999)
start_haul_lon	F	Invalid not null
start_haul_lon	F	Invalid length (12)
start_haul_lon	F	Invalid direction (E,W)
start_haul_lon	F	Invalid number
start_haul_lon	F	Invalid format (99999.9999)
depth	F	Invalid not null
depth	F	Invalid length (>4)
depth	F	Invalid number
depth	F	Invalid format (9999)
depth	I	Invalid range (>=0)
depth_uom	F	Invalid not null
depth_uom	F	Invalid depth unit of measure (from fvtr_units_of_measure)
start_set_date	F	Invalid not null (depends on gear type, program code)
start_set_date	F	Invalid format (MM/DD/YYYY)
start_set_time	F	Invalid not null (depends on gear type, program code)
start_set_time	F	Invalid format (HH24:MI:SS)
start_ set _lat	F	Invalid not null (depends on gear type, program code)
start_ set _lat	F	Invalid length (11)
start_ set _lat	F	Invalid direction (N, S)
start_ set _lat	F	Invalid number
start_ set _lat	F	Invalid format (9999.9999)
start_ set _lon	F	Invalid not null (depends on gear type, program code)
start_ set _lon	F	Invalid length (12)
start_ set _lon	F	Invalid direction (E,W)
start_ set _lon	F	Invalid number

start_ set _lon	F	Invalid format (99999.9999)
end_set_date	F	Invalid not null (depends on gear type, program code)
end_set_date	F	Invalid format (MM/DD/YYYY)
end_set_time	F	Invalid not null (depends on gear type, program code)
end_set_time	F	Invalid format (HH24:MI:SS)
end_ set _lat	F	Invalid not null (depends on gear type, program code)
end _ set _lat	F	Invalid length (11)
end _ set _lat	F	Invalid direction (N, S)
end _ set _lat	F	Invalid number
end _ set _lat	F	Invalid format (9999.9999)
end _ set _lon	F	Invalid not null (depends on gear type, program code)
end _ set _lon	F	Invalid length (12)
end _ set _lon	F	Invalid direction (E,W)
end _ set _lon	F	Invalid number
end _ set _lon	F	Invalid format (99999.9999)
start_haul_date	F	Invalid not null (depends on gear type and haul by haul)
start_haul_date	F	Invalid format (MM/DD/YYYY)
start_haul_time	F	Invalid not null (depends on gear type and haul by haul)
start_haul_time	F	Invalid format (HH24:MI:SS)
soak_hours	F	Invalid length >(>4)
soak_hours	F	Invalid number
soak_mins	I	Invalid range (0 – 90) (The industry likes to be able to report just minutes like 75 or 90 so we provided the option to not have to enter 2 values in both hours and minutes)
soak_mins	F	Invalid number
soak_hours+soak_min	F	Invalid not null (depends on gear type)
soak_hours+soak_min	I	Invalid ranges (depends on gear type)
end_haul_date	F	Invalid not null (depends on gear type and haul by haul)
end_haul_date	F	Invalid format (MM/DD/YYYY)
end _haul_time	F	Invalid not null (depends on gear type and haul by haul)
end _haul_time	F	Invalid format (HH24:MI:SS)
end_ haul _lat	F	Invalid not null (depends on gear type, program code)
end _ haul _lat	F	Invalid length (11)
end _ haul _lat	F	Invalid direction (N, S)
end _ haul _lat	F	Invalid number
end _ haul _lat	F	Invalid format (9999.9999)
end _ haul _lon	F	Invalid not null (depends on gear type, program code)
end _ haul _lon	F	Invalid length (12)
end _ haul _lon	F	Invalid direction (E,W)
end _ haul _lon	F	Invalid number
end _ haul _lon	F	Invalid format (99999.9999)
end_set_date/time	F	Invalid end_set_date/time < start_set_date/time (haul by haul only)
start_haul_date/time	F	Invalid start_haul_date/time < end_set_date/time (haul by haul only)
end_haul_date/time	F	Invalid end_haul_date/time < start_haul_date/time (haul by haul only)
hail_amount	F	Invalid not null
hail_amount	F	Invalid length (> 8)
hail_amount	F	Invalid number
hail_amount	F	Invalid format (99999999)

species_code	F	Invalid not null
species_code	F	Invalid length (>12)
specied_code	F	Invalid species code (from fvtr_species_codes)
disposition_code	F	Invalid not null
disposition_code	F	Invalid disposition code (from fvtr_dispositions)
disposition_code	I	Invalid disposition for grade code
land_port	F	Invalid not null
land_port	F	Invalid length (>10)
land_port	F	Invalid landing port (from fvtr_ports)
land_date	F	Invalid not null
land_date	F	Invalid format (MM/DD/YYYY)
land_time	F	Invalid not null
land_time	F	Invalid format (HH24:MI[:SS])
appor_amount	F	Invalid not null
appor_amount	F	Invalid length (>8)
appor_amount	F	Invalid number
appor_amount	F	Invalid format (99999999)
dealer_permit_num	F	Invalid not null
dealer_permit_num	F	Invalid dealer permit num (from fvtr_dealers)
sold_date	F	Invalid not null
sold_date	F	Invalid format (MM/DD/YYYY)

catch vs apportion		
species_code	F	Unmatched species (species in kept catch not in apportion or in apportion but not in kept catch)

dates		
set and haul date/time	F	Invalid not between sail and end date/time
landing date/time	F	Invalid not between sail and end date/time
sold date	I	Invalid not between sail and end date/time+7 days

Incomplete trip : A valid trip must have a trip record, effort, catch and landing.

Effort	F	Invalid missing efforts
Catch	F	Invalid missing catch
Landing	F	Invalid missing landing