

Automated Commercial Environment

Chapter 1: Getting Started with Electronic Data Interchange (EDI)

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U.S. Customs and
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1. Getting Started with Electronic Data Interchange (EDI)

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1 E-Manifest Truck Process Overview

EDI – Electronic Data Interchange is defined in this context as the exchange of transaction messages from computer to computer, using structures based on a recognized national or international standard.

Transmission of manifest data related to the movement of land border crossing conveyances may be supplied to CBP using the prescribed ANSI X.12 or EDIFACT messages. Existing ANSI X12 data sets used in other modes of transportation were adapted in creating the truck manifest. With consideration of our post 9/11 environment the incorporation of new data requirements have been accommodated.

1.1 Manifest Submission Process and Transaction Definition

There are four main Trade ‘parties’ that must be identified:

Carrier - A entity legally contracted to transport merchandise on a conveyance for a shipper.

Preparer - An entity authorized by a carrier to construct a manifest in a data standard format that is forwarded to Customs by a transmitter. A Preparer may be a service provider, broker, port authority, agent of the carrier or another third party.

Transmitter - An entity contracted by a carrier or manifest preparer to transmit manifest data to Customs. A transmitter could be a service provider, broker, port authority, agent of the carrier or another third party. Should be listed third

Broker - An entity licensed to prepare documents and perform other legal requirements for an importer to obtain the release of merchandise from Customs custody. This party is not really part of the manifesting process.

NOTE: There are many ways to submit e-manifests to CBP. There is no set rule on which way is optimal so review your business processes to determine the most efficient implementation.

The following is a high-level process flow diagram for the EDI process:

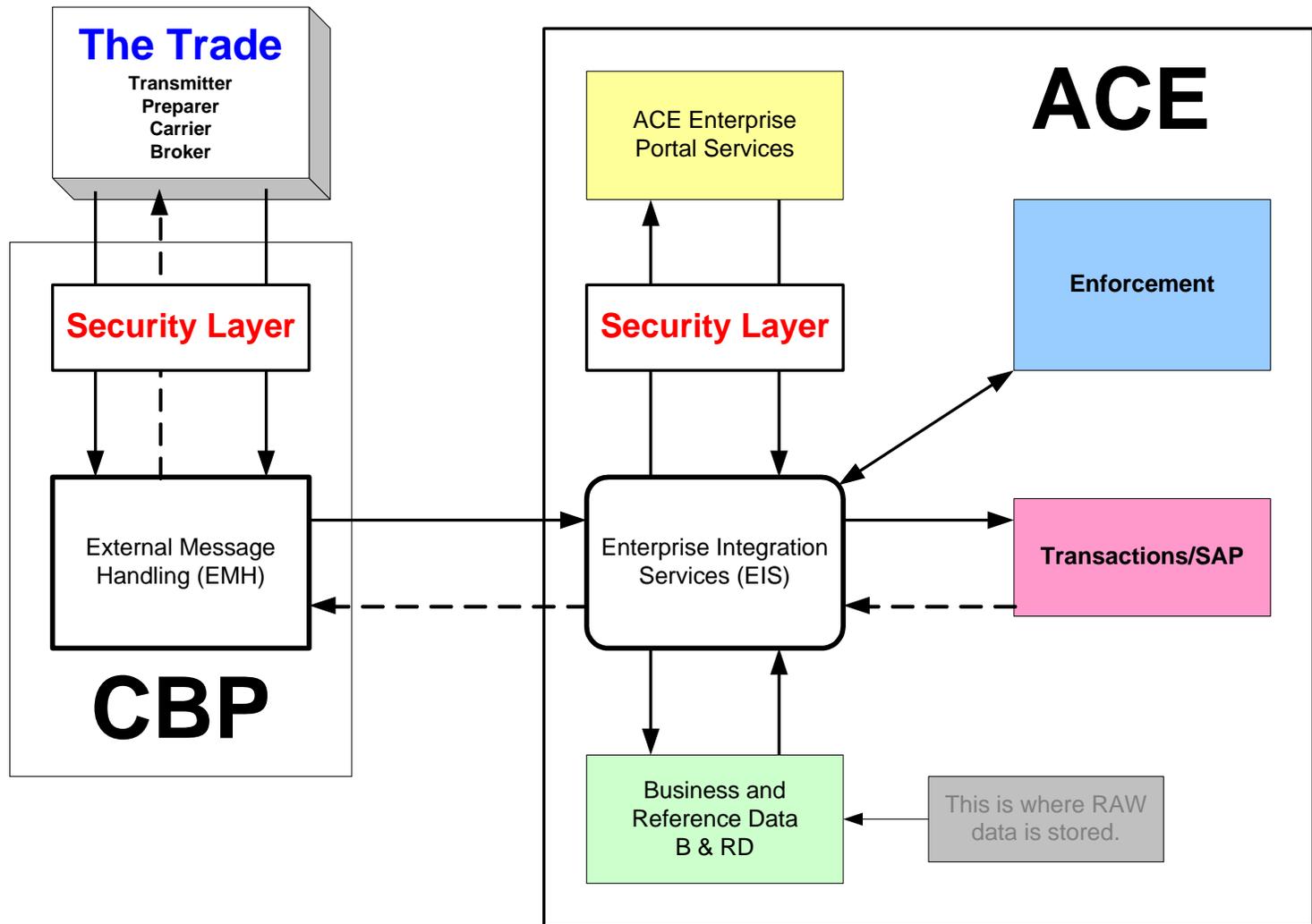


Figure 1-1. – Electronic Manifest message flow

1.2 The Standard Manifest

There are two main EDI standards that are currently being used in the United States to support the truck AMS. The ASC X.12 group of standards supported by the American National Standards Institute (ANSI) is used mostly in the U.S. and Canada, and the EDIFACT standards supported by the United Nations Economic Commission for Europe (UN/ECE) EDIFACT is primarily used internationally.

1.3 Components of EDI standards

There are three basic structural EDI standard components. Both ANSI X.12 and EDIFACT standards are based on these components. They are:

- **A syntax and encoding scheme for messages which specify the structure of the data.** Data is independent of systems, machine and media constraints and should allow for human interpretation of the data transferred. Also, the data elements or groupings of data elements contained in the messages are independent of each other so that one part may be changed without affecting any other.
- **A data dictionary** which defines standard business data elements, such as time, date, delivery address, and currency used to create messages.
- **Combinations of data elements to be used for standard messages.** Each of these sections has an equivalent EDI format with data elements combined into “segments” and segments combined into “messages.”

1.3.1 ANSI Syntax and Message Structure

INTRO here

- The EDI message unit in X.12 is known as a ‘transaction set,’ represented by a set of “segments” used for a single business transaction.
- ANSI X.12 standards specify:
 - the segments used in a transaction set
 - the sequence in which the segments must appear
 - whether segments are mandatory, conditional or optional
 - when segments can be repeated
 - how loops are structured and used
- ANSI X.12 message formats consist of the following components: See *Chapter 2 Creating ANSI Transactions*
- Interchange Control Structures
- Functional Groups
- Transaction Sets
- Segments
- Data elements

1.3.2 Interchange Envelope Control Segments

An ANSI transmission, or interchange, is opened and closed by a number of mandatory or conditional *service segments*, which constitute the “envelope” for the transmission as a whole and for messages and groups of messages within it. Inside this envelope, each message is made up of *user segments*. ISA, IEA, GS, GE,ST and SE segments are considered ‘service segments’.

The structure is organized on three levels:

- Interchange - An interchange begins with an ISA segment and ends with an IEA segment.
- Group - A group begins with a GS segment and ends with a GE segment.
- Message - A message begins with a ST segment and ends with a SE segment.

A complete one-shipment interchange can be represented like this:

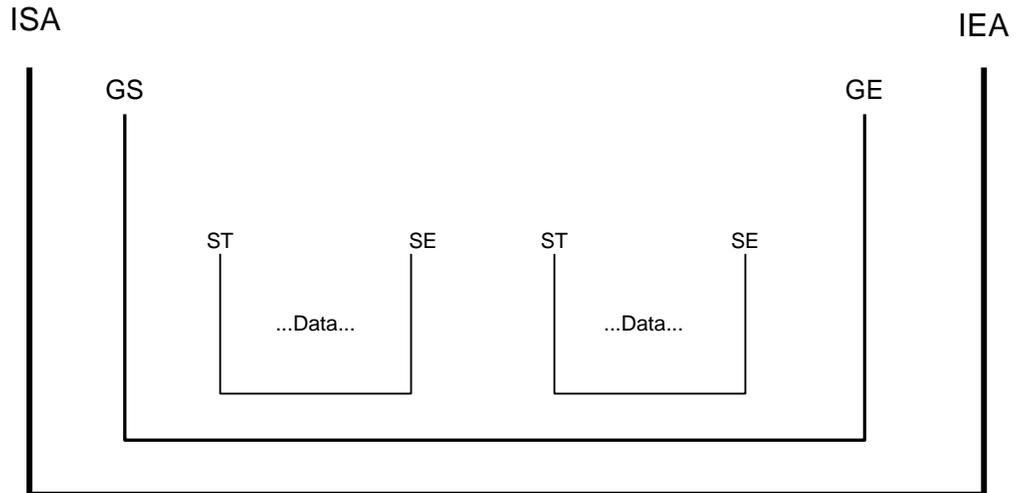


Figure 1-2 – ANSI Envelope diagram

These segments constitute the electronic structure which surrounds the transaction sets to be transmitted. They signal the beginning and end of organizational units of information within the message but do not contain data relevant to the EDI transaction. They indicate the sender of the message, the intended recipient, the date and time of transmission and the version of X.12 in use.

- The other type of control segment is associated with loops of segments that may be repeated within a message. A loop would be used to indicate the names and addresses of various parties in a electronic manifest transaction, if the billing address is different from the shipping address for a particular order. The loop header segments indicate the start of the loop and the end of the loop.

1.3.3 Transaction Set

A business transaction is defined by a transaction set composed of a number of segments of variable length. Each segment is in turn composed of a number of data elements of each with characteristics identifying minimum/maximum length displacement. A segment represents associated business data components under a single homogenized business record. A transaction set is analogous to a business document such as a manifest, while a segment is analogous to a line of information in that manifest and a data element is analogous to unit of information in the item line. For example, in the electronic truck manifest a tire type, the number of tires shipped or the unit price would be represented by data elements within a single segment.

Each transaction set starts with a transaction set header (ST), followed by a "beginning segment" that uniquely identifies the type of transaction set. The transaction set header contains the transaction set identification and transaction set control number. This is followed by other segments (which may also be found in other transaction sets) and concluded by a transaction set trailer. The

transaction set trailer (SE) is the last segment in the transaction set. It defines the end of the transaction set and contains the number of segments included and the transaction set control number.

```

ISA*00*          *00*          *02*ZZZZ          *02*USCS          *050425*0509*~*
GS*AQ*ZZZZ*USCS*20050425*1615*74*X*00406USCBP
ST*309*0074
M10*ZZZZ*J***123005GK413*TRUCK***W***OPSYS*****8
VEH**VIN123456*****P031XV*****US***TR*****14197*MS
CII*SKAPEGOAT*POLICY555*2005**20000000
NM1*EJ*1*SPARROW*JACK
DMG*DE*19670720*M***8*FL
REF*HD*Yes
REF*ACW*95453525**ZZ*US
REF*CDN*7820011*ON*ZZ*CA
REF*5K*6170363*FL**US
N3*1313 MOCKINGBIRD LANE
N4*ORLANDO**32837*US***FL
P4*3004*20061025***2359
LX*1
M11*987005GK413*ORLANDO*****ZZZZ*****ZZ
N1*SH*ACME SHIPPING CO LTD
N3*123 LONGMEAD CROSSING*
N4*SILVER SPRING**20906*US***MD
N1*CN*ACME CONSIGNEE LTD1
N3*2 RUNMOBILE DRIVE*SUITE 309
N4*ST PAUL**12345*US***MN
VID*NC**NO NUMBER*****B****D14197**US**MS
N10*100*SMOOTH FINISH SOCKS*****L*1000**CTN*CA
LX*2
.
.
LX*3
.
.
SE*25*0074
GE*1*74
IEA*1*000000074
    
```

Figure 1-3 – Example ANSI Envelope

A transaction set specification indicates the segments used and the order in which they appear. A segment is specified to be included in a transaction set by citing its identifier as assigned in the Data Segment Directory.

1.3.4 Segments

A segment is an intermediate unit of information in a transaction set. It consists of logically related data elements in a defined sequence: a predetermined segment identifier/label (which is not a data element), one or more data elements, each separated by a data element separator. The segment is ended by a segment terminator, a character unique from the data element separator.

Each segment has a unique identifier that consists of two or three alphanumeric positions. Within a transaction set, some segments may be specified as repeating, and some groups of segments may be repeated as loops. See Chapter 2.

1.3.5 Data elements

The data elements available for use within X.12 segments are defined in the IGs. Data elements have no explicit identifier, and are identified only by their sequence in the segment. A data element may be one of 5 types:

- numeric
- decimal
- identifier
- string
- date or time

Elements are represented with explicit data types. These would include, but are not limited to, CH (character), AN (alphanumeric), DT (date), TM (time), Nn (numeric with decimal connotation), R (real). Data elements are also characterized by minimum and maximum lengths, and a requirement designation identifying the element as mandatory, conditional, or optional.

The basic X.12 character set consists of uppercase letters A-Z plus digits plus basic punctuation characters (!"#&'()*,-./:;?=@). By special agreement, an extended character set may be used, which includes lowercase letters and additional punctuation characters.

X.12 does not define any specific characters to be used as delimiters. Delimiters are instead defined for each interchange by their first use in the interchange start (ISA) segment. The asterisk (*) is the preferred data element separator, but is not required. NL (new line or carriage return) is preferred as the data segment terminator. The only constraint on the choice of delimiter characters is that they are not to be used elsewhere in an interchange.

Segments and data elements are intended for global use; that is, they are independent of any transaction sets in which they may be used. A segment specification indicates the data elements used and the order in which they appear. A data element included in a segment is identified by its unique reference number in the data element dictionary (X.12.3).

1.3.6 EDIFACT Message Structure and Syntax

United Nations Standard Messages (UNSM)s are based on a common syntax and a common data element directory. The rules for constructing and transmitting messages were adopted by the International Organization for Standardization in 1987 as *ISO 9735 - Electronic data interchange for administration, commerce, and transport (EDIFACT) - Application level syntax rules*.

Each EDIFACT transmission is defined as an "interchange" and is composed of a number of "segments." Each of these segments has a "tag" containing a code that uniquely identifies the segment. This tag may also contain an indication of the structure of the segment. The segment may also be comprised of one or more data "elements."

Each tag is separated from the first data element by a delimiter character. The same delimiter character is used to separate subsequent data elements. It is referred to as a segment tag and data element separator. A segment is terminated by another delimiter character called a "segment terminator," for example ('). A data element may contain a number of sub-elements which are separated from one another by a third delimiter character: a "sub-element separator".

The EDIFACT standard specifies two levels of the syntax, one of which uses a "least common denominator" character set consisting of upper-case letters, numbers and punctuation marks referred to as level A. The delimiters in Level A are graphic characters:

- ' (apostrophe = segment terminator),
- + (plus = segment tag and data element delimiter),
- : (colon = sub-element delimiter),
- ? (question mark = an escape character to allow the delimiters to be used within data elements with their normal meanings).

The level B character set includes upper and lower case letters, numbers and punctuation. The delimiters are non-printing control characters.

There are also a number of "service" segments that must be included in all EDIFACT transmission. These are:

- Interchange Header: UNB
- Group Header: UNG
- Message Header: UNH
- Message Trailer: UNT
- Group Trailer: UNE
- Interchange Trailer: UNZ

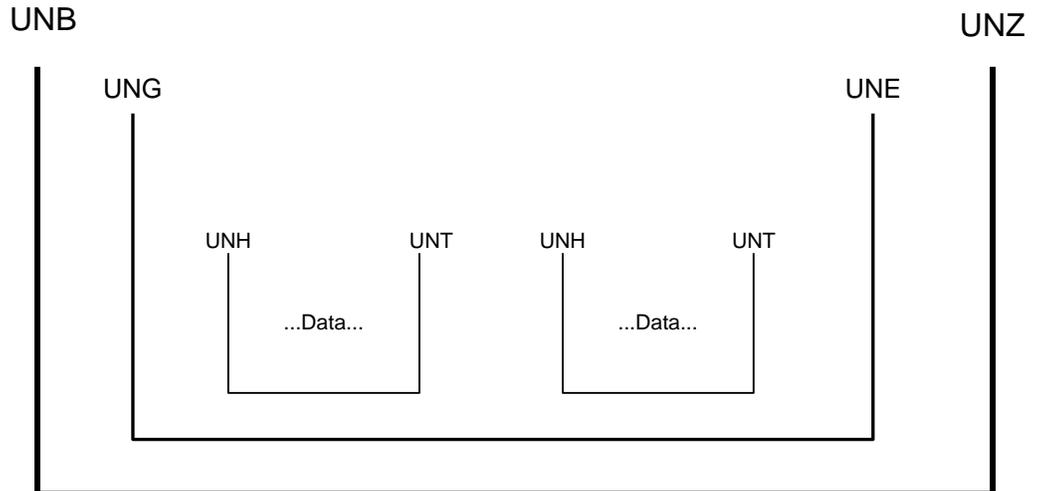


Figure 1-4 – EDIFACT Envelope diagram

Segments may be repeated and may be nested in a hierarchical manner to allow complex data structures to be transmitted.

The content of each segment is a predefined sequence of data elements as specified in the Standard Segments Dictionary. Most data elements are simple, in that they contain a single value. 'Composite' data elements contain more than one data element (sub-element).

The 'mandatory' or 'optional' requirement designator for a segment is defined by the specific transaction/message as published in the EDIFACT Standard Message Directory. The 'mandatory' or 'optional' requirement designator for elements within the specific segment are identified within the segment dictionary within the EDIFACT standard.

Because data elements are identified by their sequential position within the segment, empty or null data elements can not be omitted. In all cases where an empty data element is followed by another data element, the data element separator must be retained as a place holder:

TDT+11++03+ : : TR++I++ : 146 : : 16ABB43764376

In this example, **TDT** is the segment tag, and the '+' is used to separate the data elements. The presence of three separators together '+++' indicates that the third and fourth data elements are empty. If, however, the empty data element(s) are at the end of the segment, they may be omitted.

The designers of a message can specify that segments be repeated up to a specified number of times as long as the maximum repetitions allowed by the Standard are not exceeded.

1.4 ACE ANSI X.12 & EDIFACT

ACE uses the following comparable formats for ANSI and EDIFACT e-manifests

1.4.1 Inbound messages transmitted to CBP:

FORMAT	ANSI X.12	EDIFACT
Complete Manifests or Preliminary Shipments	309	CUSCAR
Truck Manifest (Trip/Consist)	358	CUSREP
Event Advisory Message	353	CUSCAR or CUSREP
Passenger list	309/358	PAXLST
Customs Person Identification Message		MEDPID

1.4.2 Out bound messages transmitted from CBP:

FORMAT	ANSI X.12	EDIFACT
CBP Acceptance/Rejection	355	CUSRES/ MEDPID
Functional Acknowledgement (FA)	997	CONTRL
CBP Status Information	350	CUSRES

1.5 ACE EDI BASICS

The following section defines ACE transaction data set formats.

- Complete e-Manifest
- Preliminary Manifests (Unassociated Shipments)
- Empty trucks with or without Instruments of International Trade (IIT)s
- Split Shipments (between Trips)
- Commingled Shipments (between Trailers)
- Modifying Trips and Shipments
- Deleting Trips and Shipments

1.5.1 The Complete e-Manifest

A complete truck Manifest consists of unique trip, shipment, conveyance, crew, equipment information. The Trip information refers to: trip identification, conveyance identification, crew identification, and equipment information. Trip information may be supplied to CBP in either the ANSI X.12 309 or EDIFACT CUSCAR Customs Manifest transaction set or in the (Trip Information) transaction set. If a complete manifest is transmitted to CBP both trip and individual shipment information is to be supplied in one message.

1.5.2 Preliminary Manifests (Unassociated Shipments)

A preliminary manifest may be used to send individual orphan shipment manifests without identifying the trip, conveyance, crew, or equipment.

Note: Conveyance and Equipment segments are required under ANSI X12 protocols. If actual conveyance and equipment information is not available at the time the preliminary bill is created, filler (such as 'NC' for 'no container') must be supplied to satisfy the requirements. This filler data is later overwritten when the preliminary shipment is attached to actual trip, conveyance, and equipment information to create a complete manifest

NOTE: Changes are not performed when using a preliminary until after submission of an end of manifest, that is, 353 or CUSREP.

1.5.3 Valid ID's to Auto-import Account Data

The manifesting carrier will be obligated to provide detailed crew, passenger, conveyance, and equipment information in the complete transaction set or the Customs Consist Information (Trip) manifest Set. In each case (for crew member, passenger, conveyance, or equipment) either the complete information, an ACE ID number, or a valid reference number from the carrier's account will be mandatory to satisfy this requirement.

1.5.4 Empty trucks with or without Instruments of International Trade (IIT)s

The manifesting carrier may transmit an original Customs Consist Information Set listing the trip, conveyance, equipment, and crew information but minus shipment information to identify an empty truck with instruments of international trade (IIT)s. The manifesting carrier will be required to transmit a Customs Events Advisory Details transaction set to signify there are no shipments.

1.5.5 Split Shipments (between Trips)

Customs defines a split shipment as one (1) shipment of multiple quantities destined for one (1) conveyance and trip and carried on two (2) or more conveyances and trips at the convenience of the carrier at the time of loading. Regardless of how the shipment is transmitted (in a preliminary or complete) a Trip Information Transaction set for each trip that the shipment is associated with must be transmitted, and the SCN for the split shipment must be submitted under the equipment record with the boarded quantity for the equipment. There is no change from current procedure here.

1.5.6 Commingled Shipments (between Trailers)

In the case of one shipment on one conveyance/trip in multiple pieces of equipment (i.e. tandem trailers): this is a commingled shipment rather than a split shipment. There are a couple ways of looking at this:

If the preliminary bill does not have a trip number indicated ('system'): an original Trip Information Transaction set needs to be created to set up the trip. If the shipment is divided between two or more pieces of equipment, the SCN must be listed under each equipment record. No boarded quantities should be submitted.

If the preliminary bill has a trip number and the two or more containers associated with it are already listed in the body of the bill, with the quantities of the bill in each container, the carrier needs to transmit an amended trip information transaction set (358 set) to add the crew and conveyance information. In EDIFACT he must add a new CUSREP and a PAXLST.

If the shipment is in a complete manifest (309 set and CUSCAR) and 2 or more container records are submitted within the bill of lading data with quantities and other information associated with each container.

The commingled bill does not have to be listed, since the information was already transmitted in the original transaction set. Outside of adding crew information, the

only purpose of this trip information transaction set would be to add other preliminary bills that do not have trip number identifiers, or change equipment.

1.5.7 Modifying Trips and Shipments

To correct or amend a complete Manifest submitted as a single transaction set, an amended transaction set will be submitted as an electronic manifest discrepancy report with the appropriate amendment codes.

As an alternative, Trip and Shipment details may be supplied separately to CBP. If submission of Trip and Shipment data is supplied separately then the submission of an end of manifest message via the Customs Advisory Details transaction set message will be required to notify Customs that the manifest is complete. Modifications made to a Manifest after the submission of the end of manifest message will be considered a manifest discrepancy report and will require the appropriate amendment code.

1.5.8 Deleting Shipments and Manifests

To delete a complete Manifest submitted as a single transaction set, a trip information transaction set will be submitted as an electronic manifest (309, 358 set and CUSCAR, CUSREP)t with the appropriate delete code.

To delete a shipment, it has to be unassociated from a trip. An electronic manifest discrepancy report (358 set, CUSREP) is submitted with the appropriate delete code

1.6 One Step vs. the Three Step Process Submission

The one step process consists of a complete transaction set submission whereas the three step process consists of first, the submission of an unassociated shipment, followed by a trip information submission and linking, and lastly the customs advisory details transaction set which signals the end of the manifest. Further detailed description of these two processes follows for both ANSI and EDIFACT, *see Chapter 2 – Creating ANSI Transactions and Chapter 3 – Creating EDIFACT Transactions.*