

**A Petroleum Industry Data Exchange**

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**PIDX**

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**Implementation Guideline for**

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**EDI**

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**Electronic Data Interchange**

***Crude Oil Settlements (COS)***

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# 1.0 INTRODUCTION

## 1.1 Purpose of Guidelines

The purpose of this guide is to enhance by means of Electronic Data Interchange the capability to communicate by computer between trading partners.

## 1.2 Scope and Applicability

Because of the wide range of user industries, the ASC X12 Standards were created to be as broad as possible and to accommodate all business needs. The generic result, although usable, has much more information than is of interest to any particular group. In a practical sense, in order for the Standards to be used in an efficient and effective manner, the scope needs to be defined in more selective terms.

This guide was prepared for use by the petroleum industry and is intended to serve as a general guideline to achieve consistency in application within the petroleum industry and with our trading partners for the processing of ANSI ASC X12 Transaction Sets.

It is anticipated companies involved in implementing EDI will utilize this guideline in developing their own guide to meet their specific needs.

The American Petroleum Institute (API) Internal Audit Committee "ELECTRONIC DATA INTERCHANGE (EDI) AUDIT CONTROL GUIDE" addresses EDI issues related to audit, security, trading partner agreements, value added networks, data security and application controls. The API guide should be reviewed in conjunction with this PIDX Implementation Guide to gain a broader perspective of the issues involved.

## 1.3 Responsible Entity

EDI is a partnership. It takes at least two organizations to do EDI. EDI is also a new way of conducting business that involves several individuals or functional groups within each organization. For EDI to be successful, all who are involved must work together in an open and informed environment.

There are specific functional groups within your organization that will need to be involved in the exchanging of EDI. The organization needs to have one individual assigned as the EDI Coordinator. Each functional group needs a contact person from its personnel to assist in the implementation process and the ongoing operations.

Some areas of a company most likely to be impacted are:

- Accounts Payable
- Information Services (MIS)
- Accounts Receivable
- Sales Organization
- Purchasing Group

- Financial Group

There may be other functional groups within a company and they should be included in above list.

This Implementation Guide was developed by the PIDX Crude Oil Settlements User Group.

Any comments or questions concerning this guide should be directed to the PIDX Crude Oil Settlements User Group Chairperson.

## 1.4 Introduction to EDI

EDI is defined as the electronic transmission of business documents in a standard format between two companies. The definition can be expanded further to include the electronic transmission of business documents from the application program of one computer to the application program of another computer within the framework of a standard format. The key elements in the definition are business documents and standard format. EDI is a technique that reduces costs and errors associated with a paper document environment. EDI replaces the mail delivery and reentry of documents with the electronic mailbox and the delivery of your business document directly to your computer application program.

## 1.5 How to Use Implementation Guidelines

Chapters 1 through 9 of this Implementation Guideline should be reviewed prior to working through the detail of the transaction sets (business documents) contained in Chapter 10. A review of Chapters 1 through 9 will provide insight into the various issues of requirements (i.e., business considerations, translation software, formats, legal issues, terminology, communications considerations) which are not covered in the detail of the transaction sets.

Any areas of disagreement or misunderstanding should be resolved to the mutual satisfaction of all trading partners involved. Any data contained in this guideline which is felt to be incorrect from a petroleum industry viewpoint or which should be changed or updated based upon implementation experience should be brought to the attention of the Chairperson of the Crude Oil Settlements User Group (COS). Any such changes will be handled by the COS User Group with the PIDX Standards and Maintenance Committee as noted in Chapter 5.0 MAINTENANCE, Section 5.1 Maintaining Guidelines or Chapter 9.0 FORMS AND DOCUMENTS, Section 9.1 X12 FORMS.

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## 2.0 BUSINESS ISSUES

### 2.1 Implementation Considerations

The purpose of this section is to provide a guideline for the successful implementation of EDI in your organization.

EDI is a major undertaking in that it impacts many areas of a company's structure. The management of the company must be involved in the approval phase of the project to ensure adequate support, both from financial and support resources and assistance from the area impacted.

The most common problems to be aware of when undertaking the implementation of EDI are:

- Avoid deviating from the published standards. This may cause you to have to customize your system when adding new trading partners and increase time and cost.
- Avoid too much too soon - do not commence the use of your EDI system in a production mode prematurely.

Be sure that your systems interfacing with EDI are working properly. EDI is not a cure for the problems you have in your existing systems.

#### EDI IMPLEMENTATION CHECKLIST

- Obtain management commitment to EDI
- Establish a plan
- Establish a project team
- Designate EDI business contacts
- Review internal system and business procedures
- Conduct a trading partner survey
- Conduct a communication/equipment survey
- Review documents to be exchanged
- Develop an overall design
- Decide on translation software configuration
- Implement translation software
- Map Business Requirements to X12/EDIFACT standard
- Code and test the interface to in-house systems
- Decide on network provider
- Conduct system test with translation and network
- Conduct system test with your trading partner
- Determine production start up date
- Implement

## 2.2 Timing of Transactions

Determine when the business transaction is made available to the trading partner, i.e., release of remittance advice prior to funds settlement. There are three areas to be considered within timing of transmissions: legal, business, and technical issues.

Legal Issues — Mailbox concerns to evaluate:

- Consideration for post mark
- Consideration of utilizing VAN 'warehousing'
- Utilizing 'recall' message time-frame
- Timing of transaction acknowledgement
- Timing of mail forwarding to recipient
- Frequency of access by trading partner to obtain mail from mailbox

Business Issues — Determine when the business transaction will be made available to the trading partner. This involves decisions on warehousing, release, cancellations and return, dependent on the type of business transaction.

Technical Issues — Determine the ability of the existing computer systems to respond within some time definition. System changes might be necessary to accommodate the identified business needs.

## 2.3 Modes of Operation

Basically, most transmissions would be in a production mode. However, some provision must be made for a testing mode as new version/releases are implemented.

## 2.4 Security

The EDI Standard is designed to provide at least as high or higher a degree of security as today's mail or telephone service, optional ANSI security standards X12.42, Cryptographic service message and X12.58. Security structures, provide a higher degree of security than today's mail or telephone service. The Standard prevents the commingling of data types and makes it extremely difficult to obtain unauthorized data. Even with this assurance, users should take steps to assure confidentiality of transactions as they do with current mail and telephone systems.

The security needs to be reviewed on three levels: Internal, Trading Partner, Third Party Carriers.

Review your Internal Security Requirements for Data Communications, Software, and Data. Review with Trading Partner(s) their security requirement in the above areas. Review the security and access requirements of the carrier.

Depending on the type of data and its impact to your operations, security should be as strong as necessary to protect you and your Trading Partner. These arrangements should be spelled in Contract, Trading Partner Agreements, and Documentation. There are many approaches to securing a system. The six (6) typical approaches here can be used sin-

gularly or as a package, i.e., for financial or pricing data it may be desirable to have all six (6) in place.

The six approaches are:

- **Data Encryption**

- Data is encoded by a software source encoder into unreadable scrambled text. The receiving party would unscramble it to plain text.

- **Authentication**

- Authentication is a technique of identifying the originator of a message as well as protecting the data integrity of a message. Authentication requires that two parties share a common private key. This private key is used to create an encrypted Message Authentication Code (MAC) that is dependent on the contents of message to be protected. The originator of the message will calculate the MAC and append the MAC to the message. The recipient of the message will calculate a MAC and compare it to the MAC appended to the message. If the MAC are equal, the recipient is assured of the originator of the message and the integrity of the message.

- **Call Back Modem**

- This method has the receiving party call the sender back at a predetermined phone number before transmission occurs.

- **Passwords**

- Sender protects data with password that must be supplied to the system before the Receiving Party obtains access to the data

- **Access Codes**

- Similar to Passwords, the Receiving Party must enter certain codes to access the data.

- **Terminal Source Security**

- This is a Software Coding that prohibits data from being sent or received except from a specific logical or physical device. If the device is not used, then the software erases the screen. In addition, this can be set up with a time slot. If transactions are attempted outside of the specified time slot, the software will cease operating.

Each of these elements plus physical security, when used, can provide an effective deterrent to unauthorized entry to systems.

## 2.5 Recovery Procedures

Establish backup procedures to provide for retransmitting EDI messages.

- Establish backup and recovery procedures if computer systems or transmission fails.
- Establish a maximum number of attempts of retransmission following a text transmission error, to minimize communication costs for bad connections.

- For real time transactions, such as the Advance Ship Notice and Ship Schedule, a 24 to 48 hour immediate access backup should be the minimum.
- For batch transactions, such as the Purchase Order and Invoice, a 1 to 2 week immediate access backup should be the minimum.
- In either case, some type of archival storage should be maintained where the data is backed up and stored on a more permanent basis. The permanent archives and supporting system should provide for recovering a specific EDI message from the archives and retransmitting it.
- The backup and recovery system must be thoroughly documented to allow anyone with the proper authority to access the system, to retransmit data.

#### USE OF THE FUNCTIONAL ACKNOWLEDGMENT

- The Functional Acknowledgment (997) transaction set can be used to provide a level of automation in the backup and recovery area. If the EDI system expects to receive a Functional Acknowledgment for every transaction that it sends, then the EDI message should be available for retransmission until a Functional Acknowledgment corresponding to a specific EDI message is received. Once the Functional Acknowledgment is received the original EDI message can be archived regardless of the normal archive timing.
- The system could be designed to provide a degree of flexibility. The use of Functional Acknowledgments could then vary based on business requirements. It may be appropriate to send/receive Functional Acknowledgments by trading partner, transaction, some combination of the two, or some other variable unique to your EDI requirements.
- Your level of risk must be known when considering whether the additional costs of including a flexible Functional Acknowledgment component in your EDI system and sending/receiving Functional Acknowledgments are justified.

#### ESTABLISH RECOVERY PROCEDURES TO ALLOW FOR CONTROLLED MANAGEMENT OF UNUSUAL TELECOMMUNICATIONS PROBLEMS.

- Some potential problems that should be managed by the EDI system:
  - A trading partner's computer that won't answer when your computer calls to pick up or deliver EDI messages.
  - A bad connection that causes continuous or an excessive number of retransmissions.
- Develop a way for the EDI system to notify someone when a predetermined threshold number of errors are encountered.

#### DISASTER RECOVERY CONSIDERATIONS

Disaster recovery becomes correspondingly critical to the amount of business that is conducted through the EDI channels. Consider the conse-

quences to you and your trading partners if you or your trading partner were suddenly unable to telecommunicate for a week.

It would be unwise to assume that you could fall back on a paper based system. Your trading partners may not be able to quickly switch from EDI messages to mailing their business transactions to you. You may not have immediate access to the resources within your organization that are needed to process paper transactions when many departments all require the same resources and with the same urgency.

Have a plan in place to deal with extreme problems such as:

- Total loss of a Data Center or computer system
- Loss of a phone company switch station servicing your area

## 2.6 Audit Considerations

### Introductions

Audit Trails need to be established in any endeavor that transmits business information between two or more separate entities.

These trails need to provide a means to reconstruct total transaction sets in the event of failure somewhere in the process.

### Audit Trails

Audit considerations should provide for:

- Ensuring all records and/or documents are sent and received
- All errors and causes are documented and reported
- Time recording of Communication Start and Stop for both parties
- User Report for record and document counts introduced into any software package

### Areas of Concern

Most EDI translator and communications Software packages provide printout of Transaction Sets and Communication Session Statistics.

Some typical areas are:

- Communication Log (Connection Log) record times for:
  - Connection to Value Added Network (VAN)
  - Log On Time to VAN
  - Sending or Receiving Times
  - Completion
  - Log Off
- Interpreter Log
  - List of records
  - List of Transaction Sets

- Error found during the Interpretation Phase  
(Records in error should be highlighted in some fashion)

- Generator Log
  - List of Functional Group transmitted and generated
  - Errors found in generation of the EDI formatted record

User reports should highlight:

- Expected record counts of files to be introduced into EDI System
- Document counts to compare to Transaction Sets being transmitted

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**Documents**

Document Sharing Hub

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## 3.0 LEGAL CONSIDERATIONS

### 3.1 General Introduction

Electronic Messaging Systems (EMS) and applications such as EDI affect business practices. Because the law does not address the complexities of this technology, doing business via EMS may involve legal uncertainties. EMS complexity can only increase as more sophisticated hybrid and enhanced service offerings become available. The law has not kept pace with the complexity of EMS.

Businesses require control over their contractual correspondence. Such control includes determination of when correspondence is transmitted, to whom it is transmitted, when it reaches the recipient, and an appraisal of the accuracy, integrity and risks of the communication. Some of the legal issues include, e.g., various offer and acceptance rules, the propriety of paperless communications, EMS and electronic mailbox control, ownership and liability, and various risks of transmission. Further study is required to identify problem areas and to propose flexible and adaptive rules fostering greater legal certainty.

Most commercial law has been developed without consideration of electronic messaging systems such as EDI. The precise legal status of EDI transmissions is therefore unclear in many cases. It may be appropriate for commercial law to be modified to delineate the right and duties of EDI users with greater certainty.

EDI has been used successfully for a considerable number of years. For a large and impressive list of companies, legal uncertainties have not posed a substantial obstacle to the adoption of EDI. In many instances the legal risks of using EDI--when compared to the risks associated with traditional paper-based trading systems--have been considered manageable. Certain legal risks have been addressed with special agreements between trading partners and the adoption of appropriate in-house policies.

It is important that new users consult with counsel throughout the EDI implementation process. This chapter provides a very brief introduction to some of the issues counsel should consider addressing when a new user implements EDI. The full range of issues that must be dealt with, and the importance of any particular issue, will vary from one user to the next.

This section attempts to review some of these legal issues. The comments below are intended to be utilized as a guide and are not intended as legal advice.

### 3.2 Recordkeeping

Internal control systems should be reevaluated in the context of EDI to assure responsibility for data maintenance, including audit trail, transaction reconciliation, and backup capability.

When business transactions are recorded on paper documents, businesses can store those documents as evidence of what took place. EDI

does away with the paper documents, of course. Internal recordkeeping systems should therefore be reevaluated in the context of EDI. Among the issues to be addressed are these:

- Retention of both standardized formats and translated data for both incoming and outgoing transactions.
- Retention of translation routines/software by version release in electronic or hard copy format. This may be necessary to provide the basis for translation of standardized messages/transactions for prior versions and releases of standards no longer supported by the company.
- Retention of translation files/tables used to convert external codes to internal codes.
- Keying record retention/destruction policies to existing regulatory requirements covering various transactions or business requirements, i.e., retention requirements for data related to tax reports, statute of limitations relating to legal action such as lawsuits and bankruptcy proceedings and retention requirements associated with various business documents relating to operating agreements/contracts.

### 3.3 Authentication

Assuring data integrity--that it remains unaltered throughout the trading process is critical. Company procedures as well as network access requirements vary widely. What degree and strength of authentication systems and procedures is commercially reasonable is unclear.

Traditionally, paper documents and signatures have been used to authenticate the data that constitutes the majority of commercial transactions. Authentication of EDI transmissions relies on different methods. With the implementation of any particular EDI system, users and their counsel should consider these issues in the context of the user's particular needs:

- Will the integrity and completeness of data transferred between trading partners be adequately confirmed before it is relied upon?
- Will the source of a message, and the legal authority of that source, be satisfactorily verified before the message is relied upon?
- Will adequate records be kept to show the authenticity of messages were tested to the degree appropriate?

### 3.4 Trading Partner Agreements

Given the inadequate treatment of EDI in the law, users should exercise care in developing and entering into trading partner and third party agreements. Comprehensive trading partner and third party agreements should be executed prior to commencing EDI trading. In addition to conventional "standard terms and conditions" which (with some variability) are used to define conventional trading relationships on purchase orders, users should consider what impact data communications and computer systems have on their business correspondence and trading relationships--and thus appropriate provisions for EDI trading.

Many EDI users enter a special agreement with each of their trading partners to govern their EDI. (The ABA has published a model TPA that

can be used to pattern agreements). The provisions that should be included in such an agreement will vary from user to user. Among the issues that might be addressed in a trading partner agreement are these.

- In a recitals clause, state the parties intention to contract electronically.
- Identify the specific standards, transaction sets, and versions which may be sent via EDI.
- Alternatively, permit a party to transmit any transaction set, binding the recipient to any of them upon which he reasonably relied.
- Mention industry guidelines--either incorporated by reference, or specifically reclosed from the agreement.
- Identify Value Added Network (VAN) service providers and apportion VAN's costs between the trading partners.
- Hold each trading party liable for the acts of their respective VAN. Where both parties use the same VAN, the sender of an EDI transaction shall be liable.
- Require successful system/transaction set testing before commencing EDI trading.
- Use security procedures sufficient to ensure that transactions are reliable and that they are sufficient to be authenticated.
- State the time of receipt. e.g., is receipt completed when a transaction is placed in a VAN mailbox, or after a functional acknowledgment is communicated to the sender?
- Notify the sender of a garbled transmission, where practicable. Otherwise, the sending party's records of the document shall govern.
- Resolve whether the trading partner agreement is a free standing agreement or an appendix to a pre-existing set of terms and conditions.
- State the precedence of the trading partner agreement (vis-a-vis existing business terms and conditions) to avoid conflicts.
- Include clauses attempting to satisfy the statute of frauds.
- Include a comprehensive appendix (intended to reduce confusion).
- Consider including an arbitration clause.

### 3.5 Third Party Agreements

If user employs a third party network (TPN), the TPN will probably require that the user enter into a data communications agreement with it. Among the issues the user should consider addressing in such an agreement are the following:

- A description of the services to be provided.
- The warranty by the TPN of its services.
- The liability of the TPN for a breach of the agreement or any damages resulting from the mistakes of the TPN or its employees.
- The security, confidentiality and integrity of messages handled by the TPN.

- The responsibility of the TPN in the event of a system failure or disaster.
- The disposal of data stored by the TPN in the event of a disagreement or an interruption or termination of services.
- A description of the applicable pricing structure.
- The termination of the agreement.

### 3.6 Laws, Rules and Regulations

There is no adequate or comprehensive source of "EDI law", thus no attempt is made to list them all. The following are a few sources of laws, rules and regulations (clearly not inclusive) which users may wish to consult. Other sources may be applicable for transactions within specific markets, industries or jurisdictions.

When implementing EDI, users and their counsel should consider whether any special laws, rules or regulations apply to the users' such as utilities and government contractors should carefully consider whether regulations applicable to them restrict the implementation of EDI. It is not uncommon, for example, for government regulations to be written to require (or at least be construable to require) documents written on paper or ink signatures.

Users should also be aware that the International Chamber of Commerce has adopted Uniform Rules of Conduct For Interchange of Trade Data by Teleiransmission (UNCID). UNCID purports to set forth voluntary rules of communication by EDI users. A copy of the UNCID rules may be obtained from the ICC Publishing Corporation, 156 5th Ave., New York, NY 10010. It should be noted that ANSI X12 neither endorses nor opposes UNCID.

### 3.7 Model Trading Partner Agreement

The Model Agreement and Commentary, that is included in this document as Appendix B, is the subject of an extensive report which is available from the ABA Section of Business Law (see order information below). The Model Agreement should not be used without consulting the report. It may not be copied or disseminated for any purpose or by any party without the express written consent of the American Bar Association.

**TO ORDER:** Copies of The Commercial Use of Electronic Data Interchange: A Report and Model Trading Partner Agreement are available through ABA/Order Fulfillment, 750 North Lake Shore Dr., Chicago, IL 60611 (312/988-5555).

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## 4.0 Environments

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## 5.0 MAINTENANCE

### 5.1 Maintaining Guidelines:

Petroleum industry guidelines are reviewed and approved by the Petroleum Industry Data Exchange (PIDX) Standards and Maintenance Committee. The review and update of published implementation guides is the responsibility of the PIDX User Group originating the guidelines. Updated guidelines will be prepared as new versions or releases dictate, as experience with the standard dictates or at intervals adopted by the PIDX Standards and Maintenance Committee.

### 5.2 Maintaining X12 Standards:

ANSI ASC X12 is the domestic standard recommended by PIDX.

The maintenance of X12 standards is the responsibility of the American National Standards Institute (ANSI) Accredited Standards Committee (ASC) X12. The ASC X12 Committee is the committee established by ANSI to develop national standards for Electronic Data Interchange (EDI). Changes, modifications, additions and new standards required by the petroleum industry are submitted to ANSI ASC X12 as the result of requirements developed in the PIDX User Groups. However, any participant or member of ASC X12 may submit maintenance items or requests for new transactions to the appropriate X12 subcommittee.

### 5.3 Version/Release Timing

The timing of implementing new versions/releases of standards is at the discretion of the individual company and their trading partner. It is recommended the time frame within which new version/releases of existing standards (documents) currently being exchanged will be implemented be specified between trading partners in Trading Partner Agreements or other types of contracts or agreements that may be utilized for EDI transactions. The time frame could be specific or general in nature such as a specific number of weeks or months after publication of a new Draft Standard.

In addition to the timing for implementing new standards/draft standards, the number of previous standards which will be supported should be specified. Although this may not present a problem initially, as more trading partners are brought into EDI applications and as additional versions/releases are published the maintenance of the different standards for different trading partners presents an administrative and programming bottleneck. It is suggested agreements should specify only the current and two previous release of standards will be supported.



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## 6.0 COMMUNICATION

### 6.1 General Introduction

Electronic Data Interchange depends on communication between companies. This section discusses the potential concerns in this communication.

### 6.2 Protocols

A word derived from 'programmed transmission control' which relates to the characteristics of a communication transmission such as line timing (asynchronous, bisynchronous), line speed, error detection, retransmission procedures, and message control. To establish a telecommunications connection, computers have to be able to speak to each other requiring agreed upon protocols and transmission parameters.

### 6.3 Direct Transmission

Direct Computer-to-computer communications with a trading partner requires that both firms (1) use compatible communication protocols, (2) have the same transmission speed, (3) have dial-up lines available at the same time or leased lines, and have compatible modems. Depending upon the following variables direct transmission with selected trading partners may be implemented:

- transmission management capability
- protocol compatibility
- VAN costs vs. direct transmission costs
- security (Banks generally do not use VANS for security reasons)

### 6.4 Third Party Service

For most firms, the use of Third-Party Networks may be most appropriate. The concerns mentioned in Direct Transmission can be solved with electronic mailboxing provided by this service. Mailboxing permits one trading partner to send transactions sets to another's mailbox for storage. When the other partner is ready, it will retrieve the transaction sets without concern as to a partner's transmission modes, protocols, and transmission speeds which were dealt with by a third party service. This enables establishing trading partnerships with many firms with varied computer equipment and only being required to have compatible telecommunication equipment with a third party service.

Other beneficial services are provided but the primary role of a third party service is to accept data and maintain its integrity throughout the mailboxing process.

Once the decision to use a third party service is made, there are critical issues to consider.

- Determine that the provider has the commitment, stability, and financial resources to stay in business for the long term. If your business becomes dependent on EDI and outside services, it is critical that the ser-

vice provide continuous service while maintaining an ongoing system enhancement program.

- The third party provider must have 'gateway' capability with other third parties because not all companies use the same service.
- It is important that the third party service be able to do business internationally if your firm's business dictates. Foreign supplier interface could be more important than with domestic firms.
- The Third-Party should be active in furthering development and acceptance of inter-industry standards such as ASC X12. Further development and refinement of these standards is extremely important to EDI and to fostering electronic communications.
- Be sure the 'Service' has incorporated sufficient security measures.
- The Third-Party should be working with all industries to increase the likelihood of maximum trading partner exploitation.

## 6.5 Network Interconnects

Since all parties do not use the same Third-Party service and the EDI networking market is very much customer driven, "Gateways" were established by networking vendors to meet customer needs for interfacing with trading partners. A "Gateway" is a route of entry to a computer not owned by the accessing party. Gateway capabilities exist between all major Third-Party Network vendors. In order to execute this capability, an agreement must be established between two networking vendors. A Third-Party Network's existing gateway alliances should be a consideration in selecting a service along with their future plans for developing these relationships.

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## 7.0 Miscellaneous

This section is not used for this application.



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## 8.0 GLOSSARY

### 8.1 X12 Glossary

**ANSI**

American National Standards Institute

**ANSI Standard**

A document published by ANSI that has been approved through the consensus process of public announcement and review. Each of these standards must have been developed by an ANSI committee and must be revisited by that committee within five years for update. See Draft Standard For Trial Use.

**API**

American Petroleum Institute

**Application Acknowledgment**

A transaction set whose purpose is to return a response to a transaction set which has been received and processed in an application program. The Purchase Order Acknowledgment transaction set 855 is an example of an application acknowledgment, used to respond to the Purchase Order transaction set 850 presenting such things as whether the receiver can fulfill the order and it can be done on time.

**Application Advice (824)**

A transaction set that accepts, rejects, or identifies errors in the content of any transaction set beyond the normal syntax checks.

**Area, Transaction Set**

Identifies a predefined area within a transaction set (header, detail, summary) containing segments and their various attributes.

**ASC X12**

Accredited Standards Committee, X12 comprised of industry members for the purpose of creating EDI standards for submission to ANSI for subsequent approval and dissemination; or for submission to the UN/ECE for approval and submission of UN/EDIFACT standards.

**Authentication**

A mechanism which allows the receiver of an electronic transmission to verify the sender and the integrity of the content of the transmission through the use of an electronic "key" or algorithm which is shared by the trading partners. ANSI standards covering authentication are X12.42, Cryptographic service message, and X12.58, security structures.

**BSR**

Bureau of Standards Review

**CEC**

Commission of the European Communities

**CEN**

European Committee for Standardization

**CIDX**

Chemical Industry Electronic Data Interchange Organization

**CMEA**

Council for Mutual Economic Assistance

**Compliance Checking**

A checking process that is used to ensure that a transmission complies with ANSI X12 syntax rules.

**Composite Data Element**

One or more component data elements delimited by sub-element separators.

**Conditional (C)**

A data element requirement designator which indicates that the presence of a specified data element is dependent on the value or presence of other data elements in the segment. The condition must be stated and must be computer processable.

**Control Segment**

A control segment has the same structure as a data segment but is used for transferring control information for grouping data segments. Transaction Set Control Segments (ST/SE), and Functional Group Control Segments (GS/GE), defined in X12.6, and Interchange Control Segments (ISA/IEA,TA1) defined in X12.5.

**Control Validation**

Confirmation that information within the control segments is correct.

**Data Element**

The basic units of information in the EDI standards containing a set of values that represent a singular fact. They may be single character codes, literal descriptions or numeric values.

**Data Element Length**

This is the range, minimum to maximum, or the number of character positions available to represent the value of a data element. A data element may be of variable length with range from minimum to maximum, or it may be of fixed length in which the minimum is equal to the maximum. (X12.3)

**Data Element Reference Number**

Reference number assigned to each data element as a unique identifier.

**Data Element Requirement Designator**

A code defining the need for a data element value to appear in the segment if the segment is transmitted. The codes are mandatory (M), optional (O), or conditional (C).

**Data Element Separator**

A unique character preceding each data element that is used to delimit data elements within a segment.

**Data Element Type**

A data element may be one of six types: numeric, decimal, identifier, string, date, or time.

**Delimiters**

The delimiters consist of two levels of separators and a terminator. The delimiters are an integral part of the transferred data stream. Delimiters are specified in the interchange header and may not be used in a data element value elsewhere in the interchange. From highest to lowest level, the separators, and terminator are segment terminator, data element separator, and sub-element separator (only used in EDIFACT).

**DISA**

Data Interchange Standards Association. A non-profit organization funded by X12 which serves as the Secretariat for X12.

**Direct Transmission**

The exchange of data from the computer of the sending party directly to the computer of the receiving party. A third party value added service is not used in a direct transmission.

**Draft Standard for Trial Use**

Represents a document approved for publication by the full X12 committee following membership consensus and subsequent resolution of negative votes. (Final Report of X12 Publications Task Group) The Draft EDI Standard for Trial Use document represents an ASC X12 approved standard for use prior to approval by ANSI. See ANSI Standard.

**EB**

The EDIFACT Board

**EBCDIC**

Extended binary-coded-decimal interchange code. Transmitted documents being sent from one sender to one receiver.

**EDI**

Electronic Data Interchange, the computer-to-computer exchange of information which has traditionally been communicated using paper documents.

**EDICC**

Electronic Data Interchange Council of Canada

**UN/EDIFACT**

United Nations Electronic Data Interchange for Administration, Commerce, and Transport.

**EDIFACT Board**

Advisory and support Team for a number of the UN/EDIFACT Rapporteurs.

**EDI Translation**

The conversion of application data to and from the X12 standard format.

**EDI Translator**

Computer software used to perform the conversion of application data to standards such as ASC X12 and EDIFACT.

**ECX**

Electrical Data Exchange

**EIDX**

Electronics Industry Data Exchange

**Electronic Data Interchange (EDI)**

*The computer application to computer application exchange of business information in a standard format.*

**Electronic Envelope**

Electronic information which groups a set of transmitted documents being sent from one sender to one receiver.

**Element Delimiter**

Single character delimiter follows the segment identifier and each data element in a segment except the last.

**Electronic Mailbox**

A term used to refer to the place where an EDI transmission is stored for pickup or delivery within a third party service provider's system. Trading partners can also maintain mailboxes within their own domain.

**Encryption**

A process of transforming cleartext (data in its original, unencrypted form) into ciphertext (encrypted output of a cryptographic algorithm) for security or privacy.

**Functional Acknowledgment**

A transaction set (997) transmitted by the receiver of an EDI transmission to the sender, indicating receipt and syntactical acceptability of data transmitted according to the ASC X12 standards. The functional acknowledgment allows the receiving party to report back to the sending party problems encountered by the syntax analyzer as the data is interpreted. It is not intended to serve as an acknowledgment of data content. See also X12.6.

**Functional Group**

A group of one or more transaction sets bounded by a functional group header segment and a functional group trailer segment.

**Functional Group Segments**

GS/GE segments identify a specific functional group of documents such as purchase orders.

**Hexadecimal**

Base 16 notation commonly used to represent binary values.

**Industry Conventions**

Defines how the ASC X12 standards are used by the specific industry.

**Industry Guideline**

Defines the EDI environment for using conventions within an industry. It provides assistance on how to implement the X12 standard.

**Interchange Control Segments**

ISA/IEA segments identify a unique interchange being sent from one sender to one receiver (see electronic envelopes).

**Interchange Control Structure**

The interchange header and trailer segments envelope one or more functional groups or interchange related control segments and perform the following functions: 1) defines the data element separators and the data segment terminators, 2) identifies the sender and receiver, 3) provides control information for the interchange, and 4) allows for authorization and security information. (X12.5)

**Loop**

A group of semantically related segments; these segments may be either bounded or unbounded. (X12.6) The N1 loop, which includes segments N1 to PER for name and address information, is an example of a loop.

**Mandatory(M)**

A data element/segment requirement designator which indicates the presence of a specified data element is required.

**Mapping**

The process of identifying the standards data elements relationship to application data elements.

**Max Use**

Specifies the maximum number of times a segment can be used at the location in a transaction set.

**Message**

Entire data stream including the outer envelope.

**NACHA**

National Automated Clearing House Association

**Optional(O)**

A data element/segment requirement designator which indicates the presence of a specified data element/segment is at the option of the sending party which can be based on the mutual agreement of the interchange parties.

**PIDX**

Petroleum Industry Data Exchange

**Proprietary Format**

A data format specific to a company, industry, or other limited group. Proprietary formats do not comply with the ASC X12 series of standards.

### **Qualifier**

A data element which identifies or defines a related element, set of elements, or a segment. The qualifier contains a code taken from a list of approved codes.

### **Rapporteur**

An individual expert appointed by the United Nations for specific objectives.

### **Repeating Segment**

A segment that may be used more than once at a given location in a transaction set. See Max Use.

### **Security**

System screening which denies access to unauthorized users and protects data from unauthorized uses.

### **Segment**

Segments consist of logically related data elements in a defined sequence. A data segment consists of a segment identifier, one or more data elements each preceded by an element separator, and ending with a segment terminator. (X12.6)

### **Segment Directory (X12.22)**

Provides the purposes and formats of the segments used in the construction of transaction sets. The directory lists each segment by name, purpose, identifier, the contained data elements in the specified order, and the requirement designator for each data element.

### **Segment Identifier**

A unique identifier for a segment composed of a combination of two or three uppercase letters and digits. The segment identifier occupies the first character positions of the segment. The segment identifier is not a data element. The segment identifier in EDIFACT is a component data element--part of a composite data element consisting of a segment identifier and an explicit looping designator.

### **Segment Terminator**

A unique character appearing at the end of a segment to indicate the termination of the segment.

### **Sub Element Separator**

A unique character used to delimit the component data elements within a composite data element (only used in EDIFACT).

### **Syntax**

The grammar or rules which define the structure of the EDI standards (i.e. the use of loops, qualifier, etc). Syntax rules are published in ANSI X12.6.

### **Trading partner**

The sending and/or receiving party involved in the exchange of electronic data interchange transmissions.

**Transaction Set**

The transaction set unambiguously defines, in the standard syntax, information of business or strategic significance and consists of a transaction set header segment, one or more data segments in a specified order, and a transaction set trailer segment.

**Transaction Set ID**

An identifier that uniquely identifies the transaction set. This identifier is the first data element of the transaction set header segment.

**Translation**

The act of accepting documents in other than X12 standard format and translating them to the X12 standard format.

**UCC**

Uniform Code Council

**UCS**

Uniform Communication Standard

**UISG**

Utilities Industry Standards Group

**VAN**

Value Added Network. Third party communications service organizations.

**Version/Release**

Identifies the publication of the standard being used for the generation or the interpretation of data in the X12 standard format. May be found in the Functional Group Header Segment (GS) and in the Interchange Control Header Segment (ISA). See Control Segment.

**VICS Committee**

Voluntary Interindustry Communications Standards for Electronic Data Interchange.

**WINS**

Warehouse Industry National Standards guidelines

**X12**

The ANSI committee responsible for the development and maintenance of standards for Electronic Data Interchange (EDI).

**X12.5**

Interchange Control Structure. This standard provides the interchange envelope of a header and trailer for the electronic interchange through a data transmission, and it provides a structure to acknowledge the receipt and processing of this envelope. Separate segments and data elements not in X12.22 or X12.3.

**X12.6**

Application Control Structure. This standard describes the control segments used to envelop loops of data segments, to envelop transaction sets, and to envelop groups of related transaction sets.



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## 9.0 FORMS AND DOCUMENTS

### 9.1 X12 Forms

Changes to transaction sets should be submitted to the PIDX User Group supporting the transaction set. After review by the User Group, the changes should be sent to the API EDI Technical Support Staff and User Group Liaison Representative on the Standards and Maintenance Committee for review. The changes will be reviewed for clarity and accuracy prior to being forwarded to ASC X12 via DISA and the Standards and Maintenance Committee. The API EDI Technical Support Staff and/or the Technical Review Task Group will contact the User Group submitting the change request with any questions. Change requests should be submitted on the ASC X12 WORK REQUEST FORM (Copy follows this section).

The work request process is as follows:

- ASC X12 Work Request Form is completed by the user
- Forward to User Group for review
- User Group forwards to API EDI Technical Support Staff
- Change Request is reviewed for clarity and accuracy
- Questions directed to the User Group
- Completed change request forwarded to ASC X12 (DISA) and the Standards and Maintenance Committee
- User Liaison representative on the Standards and Maintenance Committee and additional Standards and Maintenance Committee representatives support the change request at the ASC X12 committee meetings
- Questions directed by any ASC X12 Committee not resolved will be referred back to the User Group

All sections of the WORK REQUEST FORM must be completed. A complete explanation of the business need (Section C. Reason for Change) is critical if the change is to be approved by ASC X12.

Any request for changes involving new data elements or data element codes which reference a code list published by an external (non-X12) organization requires the submission of ASC X12 FORM FOR NEW OR REVISED APPENDIX A REFERENCE (copy follows this section) with the WORK REQUEST FORM.

### 9.2 X12 Documents

The various X12 documents are not included in this section. Copies of documents such as those noted below can be purchased from Washington Publishing Company, the distributor approved by the Data Interchange Standards Association (DISA).

### **X12 Standards (Draft Standards and Approved Standards)**

The latest and prior version/release containing all approved or draft standards of Transaction Sets plus segment Directory (X12.22), Data Element Dictionary (X12.3) and Code Sources. The X12 Standards publication will normally contain the Interchange Control Structure (X12.5) and Application Control Structure (X12.6).

### **X12.5 Interchange Control Structure**

Defines control structures for the electronic interchange of business transactions. Provides the interchange envelope of a header and trailer for the electronic interchange through a data transmission and a structure to acknowledge the receipt and processing of this envelope.

### **X12.6 Application Control Structure**

Defines the basic structure, content and syntax of business transactions for computer to computer interchange.

The above noted documents as well as various stand-alone transaction sets can be ordered from EDI Support Services, Inc. (The fulfillment arm of Washington Publishing Company). For information about ordering these publications and the associated prices, call EDI Support Services 800-334-4912. The ordering address is:

EDI Support Services, Inc.  
P.O. Box 203  
Chardon, OH 44024-0203

**ASC X12 Work Request Form, Side 1**



**ASC X12 Work Request Form, Side 2**

**ASC X12 External Code Source Change Request Form**

## ASC X12 External Code Source Change Request Form

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