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Control del Proyecto

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4.1 Responsabilidad del administrador del proyecto.

El Jefe de Proyecto es directamente responsable de la creación de un ambiente adecuado de trabajo que permitirá que el control del proyecto sea apropiadamente ejercido. De esta manera, cuando sea necesario, el Jefe de Proyecto debe buscar consejo, aceptar asesoría, y exigir a su personal rendir el máximo esfuerzo que esté al alcance de sus posibilidades. El equipo formado y la fuerza del mismo son los principales elementos del éxito en la administración de proyectos.

En proyectos pequeños, en donde el Jefe de Proyecto es también el Ingeniero de Control del Proyecto, es esencial que el Jefe de Proyecto posea las habilidades de control de proyecto y/o de motivar el apoyo de los grupos de trabajo con el fin de proporcionar la información de calidad que es necesario para desarrollar un buen análisis que a su vez permita una toma de decisiones efectiva.

4.2 Haciendo conciencia de los costos de proyecto

El control efectivo de proyecto requiere de la oportuna evaluación tanto del costo potencial como de los posibles riesgos que se presenten. A partir de lo anterior, se hará una presentación de soluciones a la Alta Dirección. De este modo los especialistas en costos y programación deberán ser unos técnicos hábiles y también ser capaces de comunicarse eficazmente al nivel de dirección. Algunas veces, el desempeño de un experimentado ingeniero de control de proyecto no es el adecuado debido a su baja habilidad de comunicación, la pericia técnica raramente compensará por esta carencia. Así como en todas las funciones del personal, la habilidad para vender un servicio puede ser tan importante como la habilidad para desarrollar el servicio. En grandes proyectos, los grupos de trabajo de un proyecto son usualmente traídos al mismo tiempo de una variedad de especialidades con personal de diferente pérfil profesional, y la dificultad de establecer una efectiva y apropiada comunicación a todos los niveles no deberá ser desestimada. En tales casos, El Jefe de Proyecto debe rapidamente establecer un positivo ambiente de trabajo en donde las funciones por separado de diseño, procura,

construcción, y control de proyecto estén soldadas dentro de un unificado equipo de trabajo.

4.3 El síndrome del contador de semillas.

Esta es una práctica generalizada, en donde el efectivo control de costos está ausente o muy disminuído.

Esta práctica tiene dos grandes factores de contribución. En primer término, el Jefe de Proyecto no quiere un Ingeniero de Costos analítico, creativo y agresivo; por lo tanto, relega el trabajo a una retroactiva función de cuidador de archivos (de aquí el término de contador de frijoles). En segundo término, el Ingeniero de Costos puede ser el directamente responsable por esta práctica, un individuo puede no poseer las habilidades analíticas esenciales o puede no creer en una agresiva tendencia de aproximación y/o puede no poseer las habilidades necesarias de comunicación con la gente. El Ingeniero de Costos puede, de hecho, estar contento con un rol de contador de semillas.

Hoy en día es ampliamente aceptada la necesidad de una dinámica ingeniería-tendencia de costos proactiva, y es de esperar que la función deberá llegar a ser un rol principal en el proyecto, así como una efectiva tendencia de costos es esencial para el éxito de un proyecto.

Los proyectos son diseñados y construídos por gente, no por compañías. La gente lo hace uno por uno o en grupos múltiples, y si existen buenas relaciones entre el personal, se tiene oportunidad de obtener el éxito en el proyecto. Si las relaciones entre el personal son malas, se tiene poca probabilidad de éxito en el proyecto.

4.4 Proceso del control del proyecto.

Un control efectivo de proyecto consiste de un proceso que considera las siguientes actividades:

- Identificación de riesgos pontenciales antes de su ocurrencia.

- Evaluar el impacto de tales riesgos y, donde sea posible, proponer acciones para aliviar la situación.

- Proveer vigilancia constante de las condiciones de un proyecto para efectiva y económicamente crear una condición de "no sorpresas", excepto por situaciones de fuerza mayor.

4.5 Un programa de costo efectivo

Todo programa de control de proyecto debe cumplir con sus propios principios y ser costeable. Muchas grandes y supuestamente sofisticadas firmas y contratistas de arquitectura/ingeniería mantienen un sobre-control y un sobre-reporte. Esto ocurre porque de la siempre presente tendencia, los proyectos llegan a ser más grandes o más complejos, creando niveles adicionales de control, reporte y personal.

Sin embargo, **más** no es necesariamente equivalente a **mejor**. Los Jefes de Proyecto y los Supervisores de Control de Proyecto, deben evaluar cuidadosamente su programa de compañía contra los requerimientos de proyecto, eliminando toda instancia de sobre-control y sobre-reportes.

4.6 Decisiones de negocios VS decisiones técnicas

A) Decisiones con enfoque de negocios.

El paso inicial es asegurar que los tomadores de decisiones (El Jefe de Proyecto, El Jefe de Ingeniería, El Jefe de Procura/contratos, y el Jefe de Construcción) basen su decisión en buenas prácticas de negocios. Cuando estas gentes no están motivadas por una sólida ética de negocios, los costos rebasados y los programas retrasados, llegan a ser ambos, campo común e inevitable.

B) Análisis de la información de negocios.

El segundo paso es asegurar que toda la información requerida para tomar buenas decisiones esté disponible en el tiempo y en el lugar correcto. Con demasiada frecuencia la información necesaria para analizar opciones y alternativas no está disponible o simplemente no ha sido desarrollada.

Sin embargo, mucha de esta información puede ser encontrada en un buen alcance técnico de trabajo, un estimado de calidad, y un buen programa. Cuando estos documentos no están disponibles, la toma de decisiones puede ser defectuosa o ineficaz.

La etapa inicial de un proyecto es con frecuencia el tiempo cuando las trascendentes decisiones de negocios tienen que ser hechas; consecuentemente, tener información de calidad es vital en ese punto. Sin embargo, información bien definida puede no estar disponible en ese momento: opciones técnicas están todavía siendo consideradas, y planes de ejecución y estrategias de contratación están aún siendo desarrolladas. Un análisis creativo y un juicio experimentado es, por lo tanto, esencial para cruzar esta etapa, algunas veces referida como el periodo oscuro en la ejecución de un proyecto.

C) Canales de comunicación.

Este tercer paso implica la responsabilidad del Jefe de Proyecto para hacer "conciencia del proyecto" con todos los departamentos involucrados y el personal clave.

Esto asegura que el equipo de proyecto y/o los grupos de servicio trabajen respecto al plan de ejecución y los objetivos del proyecto acordados. Canales de comunicación activos, internos y externos, son también críticos para la apropiada coordinación e interfase con el cliente para establecer una atmósfera positiva para toma de decisiones y obtención de aprobaciones. Los límites de autoridad, líneas de comunicación, grados de responsabilidad, y requerimientos de aprobación, deben ser claramente establecidos en el Procedimiento de Coordinación del Proyecto.

Las habilidades de liderazgo y de motivación de personal son cualidades esenciales en un Jefe de Proyecto para que se tome conciencia del proyecto y se establezcan canales de comunicación efectiva.

4.7 Control de tiempo y costo

4.7.1 Programa tipico.

Un programa de contabilidad es una parte integral del control de costos: especifica niveles de aprobación, cuentas y procedimientos de pago, arreglos bancarios, sistemas de número de cuentas y todas las funciones necesarias para el reporte financiero del proyecto.

El seguimiento del estado financiero, proporciona una base para el desarrollo de las predicciones de costo, el cual es esencial para el éxito del proyecto. Hasta ahora, el elemento clave en el control de costos es el tiempo y un reporte detallado de los compromisos y desembolsos.

Pagos atrasados y la pérdida de facturas, causa predicciones de costo pobres o erróneos. Además, muchas técnicas de control están basadas en costos unitarios, los cuales pueden ser grandemente distorsionados si el costo a la fecha es inexactamente reportado o si la información es reportada tarde.

En proyectos pequeños, un reporte adecuado de contabilidad de costos deberá estar disponible en no más de dos días después de la fecha de corte; en proyectos mayores la disponibilidad en no más de cinco días es recomendable.

4.7.2 Grupo de contabilidad del proyecto.

En la mayoría de las operaciones de las compañías, los sistemas de contabilidad están basados en artículos de consumo, los cuales son inapropiados para la contabilidad de un proyecto. Por lo tanto, es conveniente establecer para un proyecto de ingeniería, un grupo de costos (sin el departamento de contabilidad) con un sistema de codificación apropiado.

El grupo concentra las cuentas del proyecto, y reporta directamente las actividades dia por día a la administración del proyecto. Es, sin embargo, frecuentemente difícil establecer a tal grupo, ya que los contadores temerosos de perder autoridad, pueden dificultar el control del proyecto. Otra manera, es llevar al grupo ha desarrollar un segundo juego de libros asociado con el sistema de codificación que se ha establecido.

4.8 Sistema efectivo de seguimiento.

4.8.1 El periodo obscuro.

Un tiempo difícil para el control de costo ocurre durante la transición del estimado de factibilidad al estimado total de los recursos. Esto es frecuentemente llamado el periodo obscuro, tiempo durante el cual el estimado es actualizado a una mejor calidad (pero es todavía un estimado conceptual), y en proyectos mayores este periodo puede durar 6 meses o más.

Durante este tiempo, muchas decisiones de ingeniería son hechas sin el total reconocimiento de sus impactos en costo. Por consiguiente, tener un efectivo grupo de proyecto consciente del costo es absolutamente vital, de modo que el seguimiento del desarrollo del proyecto y de los cambios del proyecto sea seguido por todos.

El control de costo, especialmente en proyectos mayores y complejos, debe ser llevado por un líder de proyecto, apoyado por un efectivo grupo de trabajo (team building program), que le reporte directamente al administrador del proyecto. EL líder presentará en las juntas de seguimiento semanal, los programas con un desarrollo detallado y análisis de todos los cambios realizados.

4.8.2 El sistema de seguimiento del cliente contra el sistema de seguimiento del contratista.

En proyectos mayores del tipo reembolsable, es común para el cliente mantener un programa independiente de seguimiento.

En contratos con clientes menores que manejan proyectos tipo "task force", las operaciones mayores de los contratistas y su organización pueden ser, inflexibles y de baja respuesta. En tales casos, un programa de seguimiento del cliente puede ser más común, exacto, y de respuesta rápida a las circunstancias

4.9 Situaciones típicas de cambios y seguimiento de tendencias

En los proyectos del tipo reembolsables, el riesgo de cambios en el diseño es más alto que el de los proyectos a precio alzado, y es común que la gran parte de las decisiones clave en Ingeniería sean a iniciativa de los ingenieros del diseño. Además, el diseño y la disciplina de proyecto son menos generalizados con el personal de ingeniería del dueño. Por tanto es vital que el control de cambios de la Ingeniería de Costos asegure que se desarrollen apropiadamente canales de comunicación entre los ingenieros del diseño y los del contratista para que constantemente proporcionen un avalúo exacto del desarrollo del diseño. Las especificaciones del diseño generales y las especificaciones de equipo deben ser monitoreadas buscando conflictos, preferencias que aumenten costos y "maquillado". Todos los cambios a las especificaciones de Ingeniería, alcance, procura, subcontratados, etc. Deben ser registrados, mediante una bitácora de diseño, cuando ocurren o cuando están siendo considerados por los grupos de Ingeniería. La relación a continuación ilustra situaciones típicas de tendencia y un ejemplo de un informe de tendencias.

Los cambios al plan de ejecución del proyecto ya sean contractuales, ambientales, reglamentarios, orientados al programa también deben ser incluidos. Se deben reportar las tendencias potenciales y aprobadas, y debe ser rutinario la preparación de estimados de costo relacionados.

Las tendencias aprobadas son aquellas que han sido autorizadas formalmente por el director del proyecto. Las tendencias potenciales incluyen elementos aprobados verbalmente y elementos que el ingeniero de costos, atraves de discusiones con el personal del Task-Force, cree que son probables de que ocurran. Los cambios potenciales se deben mostrar separadamente de las tendencias aprobadas.

1. Cambios de alcance
2. Cambios de diseño
    - Etapas tempranas
    - Ingenieros del dueño
    - Ingenieros del contratista
    - Bitácora de cambios de diseño
    - Costo / programa (calidad y seguridad)

1. Programa de reducción de alcance
2. Condiciones contractuales del proyecto
   - Operación
   - Cancelación
   - Condiciones del sitio

1. Cambios en los planes de ejecución
   - Aceleración del programa
   - Cambios de prioridades
2. Cambios aprobados / Cambios potenciales

EJEMPLO DE UN INFORME DE TENDENCIAS

REPORTE DE TENDENCIAS DEL PROYECTO

NOMBRE DEL PROYECTO:
LOCALIZACION :
CLIENTE :
No PROY. : FECHA DE EDICION DEL REPORTE
PAG DE

REPORTE No.	FECHA DEL REPORTE	DESCRIPCION	COSTO $ M	PRONOSTICO DEL CAMBIO

4.10 Junta semanal de tendencias

De las diferentes juntas que han sido varias durante la ejecución de un proyecto, probablemente la más importante sea la junta semanal de tendencias. Está no es una junta de toma de decisiones sino una ocasión cuando la información se reúne y comparte por técnicos o servicios especialistas clave.

El director del proyecto generalmente conduce la junta el ingeniero de costos frecuentemente actúa como secretario. Todas las influencias potenciales y reales, cambios, trabajos extras y tendencias se revisan y discuten. El objetivo clave de la junta es el compartir, concentrar comunicar y coordinar todas las influencias del proyecto que se están desarrollando en esa etapa. Cada parte del contrato debe tener su junta semanal de tendencia, seguida por una junta de ambas partes, por ejemplo, el ingeniero de diseño y el contratista general.

4.11 Pronósticos precisos de programa y costos

Los productos finales de un programa efectivo de control de proyecto son pronósticos precisos de programa y costos. Estos pronósticos consideran generalmente:

- Tendencias reales de tiempo y dinero
- Desviaciones, cambios y reclamos de alcance
- Cambios en las condiciones del proyecto
- Cambios al plan de ejecución
- Informe detallado del trato de contingencias
- Fallos en cumplimiento de condiciones contractuales
- Avance/productividad de ingeniería, y construcción
- Desempeño del contratista
- Experiencia de ofertas de equipo/materiales (abajo y arriba del presupuesto)
- Niveles de compromiso reales contra Planeadas
- Factores de escalación de costos
- Tarifas de cambio de moneda

- Impacto por cambios en reglamentos ambientales, gubernamentales.

4.12 **Técnicas clave para el control del proyecto.**

La aplicación de las técnicas dependerá de los arreglos contractuales y de los riesgos asociados entre los participantes del proyecto (cliente, contratista y subcontratista).

Algunas veces, las necesidades del proyecto rebasan las habilidades y aptitudes de los participantes para el control del proyecto o puede ocurrir que demasiada atención (habilidad-aptitud) de los participantes cause un sobre control del proyecto y ocasione la generación de demasiados reportes.

4.12.1 Control y agotamiento de la contingencia

a) UN FONDO DE RESERVA

En muchos proyectos, la contingencia es la mayor partida de costo. Por lo que pasa a ser una partida que es constantemente evaluada y cuidada.

Raramente es el caso, pero muchos administradores de proyecto tratan la contingencia como un fondo de reserva. Esto ocurre cuando un administrador de proyecto usa la contingencia para balancear la adición de tendencias mensuales, sin evaluar estás tendencias con un buen programa de análisis de riesgo.

Reducir la contingencia ocasionada por el importe de las tendencias adicionales y mantener el costo actualizado mensualmente, puede ser una técnica peligrosa. En tales casos, es común que la contingencia se gaste adecuadamente, antes de que el proyecto termine.

La contingencia es, esencialmente, para ser usada en datos o información desconocida; y está información desconocida será conocida cuando los compromisos sean hechos.

b) RUTINA DE AGOTAMIENTO

La siguiente figura representa un simple pero efectivo cálculo de rutina de agotamiento de la contingencia sobre la vida de un proyecto. El proceso de cálculo muestra un agotamiento que es calculado en las bases de riesgo inherente en costos no comprometidos y no gastados.

. CONTROL DE LA CONTINGENCIA --- METODO SIMPLE

CONCEPTO	% DE PREDICCION DE COSTOS NO ACORDADO	% COMPROMETIDO PERO NO GASTADO
EQUIPO Y MATERIALES	10	5
MANO DE OBRA	20	15
MANO DE OBRA SUBCONTRATOS	20	15
MATL´S Y MOD DE SUBCONTRATOS	15	10
INGENIERIA EN SEDE Y REGALIAS	10	5
INDIRECTOS DE CAMPO E INSTALACIONES TEMPORALES	10	5
OTROS COSTOS	10	5
COSTOS DEL CLIENTE	10	5
PROMEDIO	13.125	8.125

Este método cubre riesgos en trabajos para ser acordados y trabajos acordados que aún no han sido pagados. La presunción básica es que hasta que no sea pagada la factura final, hay todavía riesgo de que el incremento de costo ocurrirá, debido a entrega tardía, olvido o pérdida de facturas.

La mano de obra de construcción y los subcontratos son usualmente las partidas de más riesgo, como se muestra en la figura anterior. El máximo de contingencia que este ejercicio desarrollará es 13%.

Alternativamente, si el proyecto tiene un estimado detallado con un 10% de contingencia, entonces el porcentaje mostrado deberá ser reducido. Este ejercicio, está basado en datos históricos, y es apropiado para ser usado en el control de estimados de proyectos donde la contingencia generalmente está en el rango de 12 a 15%.

4.12.2 Control y evaluacion del cash flow

a) OBJETIVO GENERAL

El principal objetivo de los pagos de efectivo y del manejo de los procedimientos bancarios, es asegurar que el proyecto este fundado en partidas, de acuerdo con el contrato.

En contratos del tipo reembolsable, el pronóstico del flujo de efectivo es usualmente preparado para un periodo de dos meses y presentado cada dos semanas. Un buen pronóstico deberá generar no más de un 5% de exceso en los requerimientos.

Los términos de pago para contratos a precio alzado, usualmente requieren de un pago inicial, el cual es de aproximadamente de un 10% del valor del contrato, seguido por pagos mensuales directamente ligado al avance físico de los trabajos. El avance es verificado y acordado entre el cliente y el contratista.

b) DOCUMENTACION (CONTRATOS DE TIPO REEMBOLSABLE)

Después del último día de cada mes, el contratista deberá preparar un estado completo de los importes actualmente pagados, soportados por copias de facturas, nóminas, estados de cuenta bancarios, gastos del subcontratista, etc.

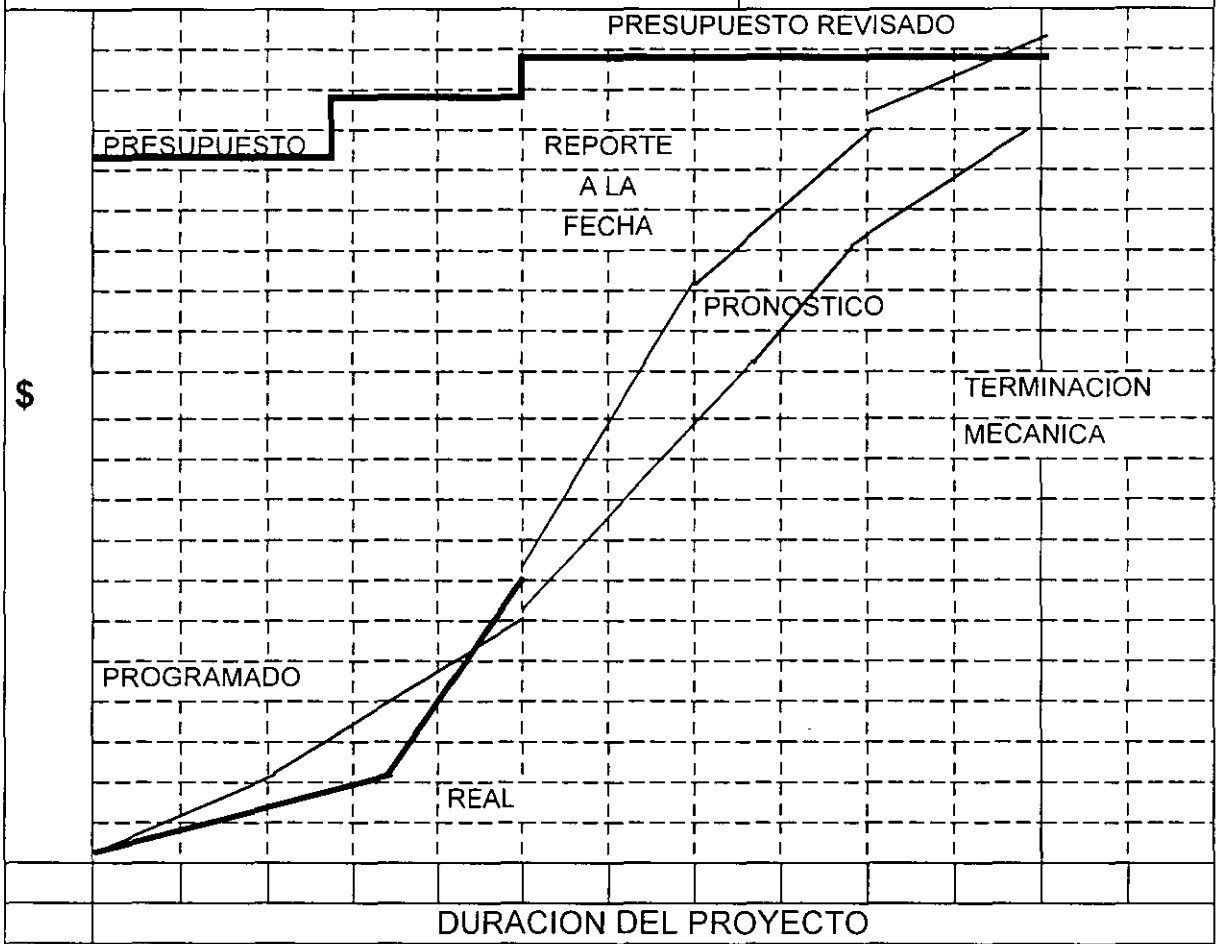
c) ARREGLOS BANCARIOS (CONTRATOS DE TIPO REEMBOLSABLE)

Un arreglo bancario comúnmente usado es el "Sistema Contable Bancario Cero". Este asume, que los contratistas no financian el proyecto y el cliente deberá proveer los fondos suficientes (de acuerdo con el pronóstico de flujo de efectivo) a la cuenta bancaria del contratista. Los intereses acumulados serán acreditados al cliente. Este procedimiento deberá formar parte de la propuesta del contratista y deberá especificar penalidades al cliente si éste no deposita a tiempo en la cuenta del contratista.

4.12.3 Curva de flujo de efectivo.

La gráfica que a continuación se presenta, describe un formato típico para una curva de flujo de efectivo de un proyecto, mostrando la curva programada y la curva real. La curva programada deberá ser evaluada cada mes para asegurar la precisión en un término corto (tres meses) del pronóstico y ser comparado con el presupuesto total.

CURVA DE FLUJO DE EFECTIVO	PROYECTO: TAREA No.: REPORTE No.: FECHA :



DESEMBOLSOS		OBSERVACIONES:
EN EL PERIODO		
A LA FECHA		
% AVANCE		
PRESUPUESTO CORRIENTE		
PRONOSTICO		

4.13 Sistema de valor ganado para presupuestos fijos

Cuando se debe determinar el porciento total alcanzado para una combinación de actividades diferentes ó para un proyecto entero, se usa una técnica esencial llamada Sistema del valor ganado (svg). Los términos "valor alcanzado" "valor realizado" o "medida de cantidad física" pueden ser usados también.

El presupuesto de un proyecto se expresa tanto en H-H como en pesos y el valor ganado esta de acuerdo al presupuesto del proyecto.

La mayoría de los proyectos están restringidos por presupuestos fijos, otros tienen presupuestos flotantes o variables. Las técnicas del valor ganado se pueden aplicar en ambos casos, aunque existen diferencias en el detalle de su aplicación.

Cuando se desarrolla un sistema de control, un proyecto se debe segmentar en sus partes controlables.

Se desarrolla una estructura de fragmentación de actividades o WBS, la cuál incluye todas las actividades que se van a considerar para determinar el avance del proyecto. Cada actividad debe tener su propio presupuesto en $ y H-H.

Se crea una estructura de fragmentación de costos de un proyecto adicionando al WBS todas las otras cuentas del proyecto que tengan un presupuesto de costo o un presupuesto de costo y H-H, pero que no son usadas para medir el avance (por ejemplo, administración, control de calidad, etc.) En otras palabras, el WBS es incorporado dentro del CBS.

Bajo un sistema de valor ganado, se establece una relación directa entre el % terminado de una cuenta y el presupuesto para esa cuenta. Esta relación se expresa mediante la siguiente ecuación:

Valor ganado = (% terminado) x (presupuesto para la cuenta)

Como se puede ver en esta ecuación, una porción de la cantidad presupuestada es ganada cuando una actividad es terminada, hasta llegar a la

cantidad total en esa cuenta. No se puede ganar más de lo que ha sido presupuestado. Por ejemplo, si $100.000 y 600 H-H han sido presupuestadas para una cuenta dada y la cuenta tiene un 25% terminado, a la fecha se han ganado $ 25,000 y 150 H-H.

Debido a que el avance en todas las cuentas se puede reducir a pesos y H-H ganadas, el valor ganado proporciona una forma de resumir múltiples cuentas y de calcular el avance total. La ecuación para hacer esto es:

% terminado = H-H o $ ganados de todas las cuentas
H-H o $ presupuestados de todas las cuentas

4.14 Rendimiento de programa y costo

Los conceptos antes discutidos proporcionan un sistema para determinar el % terminado de una ó varias actividades. El paso siguiente es analizar los resultados y determinar si el trabajo se está realizando de acuerdo a lo planeado. El sistema de valor ganado permite realizar dicho análisis.

A las H-H y pesos presupuestados y ganado se les debe agregar las H-H y pesos reales consumidos, ya que es una combinación de éstas 3 medidas la que proporciona un análisis completo el sistema de valor ganado define estos términos de la siguiente forma:

. H-H o pesos presupuestados a la fecha representan lo que está planeado a realizarse. Esto se llama costo presupuestado de trabajo programado (BCWS) por sus siglas en inglés

. H-H o pesos ganados a la fecha representan lo que se ha hecho esto se llama costo presupuestado de trabajo realizado (BCWP).

. H-H o pesos reales consumidos a la fecha representan lo que fue pagado. Esto se llama costo real de trabajo realizado (ACWP)

El rendimiento del programa es una comparación de lo que estaba planeado con lo que fue hecho. En otras palabras, las H-H que estaban presupuestadas y las ganadas. Si las H-H presupuestadas son menos que las H-H ganadas, entonces se hizo más de lo planeado, y el proyecto está delante de lo programado. En caso inverso el proyecto esta atrasado de lo programado.

El rendimiento contra el presupuesto se mide comparando lo que se hizo contra lo que se pagó.

Para hacer esto, H-H ganadas se comparan contra las H-H reales consumidas.

Si se pagó más de lo que se hizo, el proyecto esta por encima de lo presupuestado.

Las siguientes relaciones se pueden expresar como ecuaciones:

Varianza del programa (SU) = H-H o $ ganados entre
H-H o $ presupuestados
= BCWP – BCWS

Varianza del costo (CV) = H-H o $ ganados entre
H-H o $ reales consumidos
= BCWP – ACWP

Indice de desempeño de costo (CPI) = H-H o $ ganados a la fecha entre
H-H o $ reales a la fecha
= BCWP + ACWP

Una varianza positiva y un índice de desempeño de 1.0 o mayor denotan desempeño favorable. En la siguiente figura se muestra las relaciones entre BCWS, BCWP y ACWP.

4.15 Tolerancia de diseño o de desarrollo

Está tolerancia, identificada como una línea separada en el estimado, no forma parte de las contingencias. Es una condición conocida que es muy común en los proyectos, de vía-rápida y representa dinero que será usando para cubrir cambios en el diseño después de que se ha hecho la compra de un equipo. El enfoque de vía-rápida requiere una temprana colocación de pedido del equipo crítico, aún antes de que se haya terminado el diseño. Mientras se avanza en la terminación del diseño, pueden ocurrir y ocurren, cambios al equipo ya comprometido. Esto, entonces, conduce a hacer cambios en los pedidos al fabricante de equipo La tolerancia de diseño se usa para cubrir estos costos adicionados.

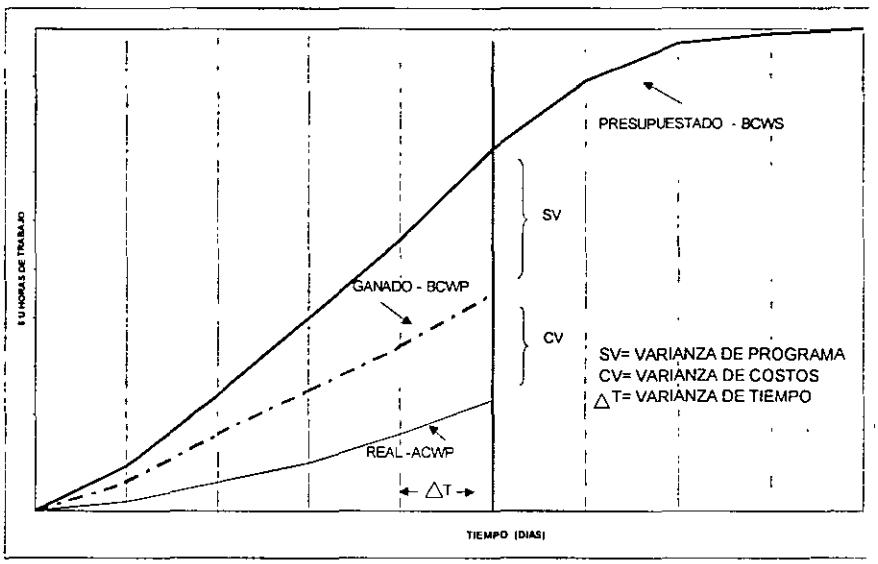
Con un programa de vía-rápida completo, pero económico, (por ejemplo, sin aceleración de programa) es costumbre iniciar la compra de equipo mayor cuando la Ingeniería esta terminada sólo al 20%. En tales casos, la tolerancia de diseño es:

. 5-15 % de categoría de equipo individual y

. 8-10% de costo de equipo estimado total

La cantidad de tolerancia de diseño depende directamente del grado de terminación de ingeniería y del riesgo asociado de cambio en diseño. A continuación se muestran dos curvas para un programa de vía-rápida completo y económico. La curva superior muestra la curva de avance histórica de ingeniería, con barra separada de categoría de materiales para el inicio de compras. La curva inferior es una guía para indicar el % de tolerancia de diseño que debe estar disponible mientras avanza la ingeniería.

El ejemplo supone que la tolerancia de diseño ha sido estimada en 10% (del equipo total) y la curva muestra la tolerancia que está siendo llevada a cero al 95% de terminación de la ingeniería. En esta etapa no debe existir riesgo de cambios de diseño. El control de la tolerancia de diseño es por ingeniería y procura.



RELACIONES ENTRE BCWS, BCWP Y ACWP

MESES										
PRESUPUESTADO	0 00	9 50	24 00	40 00	56 00	75 00	89 00	97 00	99 00	100 00
GANADO	0 00	6 00	18 00	25 00	34 00	45 00				
REAL	0 00	2 00	8 00	10 00	16 00	23 00				

DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

Módulo III "Suministros"
Del 21 al 23 de mayo.

Programa del Curso

Palacio de Minería
1998.

REV 1

TECNOLOGÍA E INGENIERÍA BÁSICA Y DE DETALLE
PROGRAMA

JUEVES 5: 21 de mayo de 1998

HORAS	CONCEPTO
8:00-8:30	DESAYUNO
8:30-10:30	CONTROL
10:30-11:00	RECESO
11:00-13:00	CONTROL
13:00-14:00	COMIDA
14:00-16:00	APOYO DE LA COMPUTACIÓN
16:00-16:30	RECESO
16:30-19:30	APOYO DE LA COMPUTACIÓN

REV 1

SUMINISTROS
PROGRAMA

VIERNES 5: 22 de mayo de 1998

HORAS	CONCEPTO
8:00-8:30	DESAYUNO
8:30-10:30	OBJETIVOS Y ORGANIZACIÓN
10:30-11:00	RECESO
11:00-13:00	SELECCIÓN DE PROVEEDORES
13:00-14:00	COMIDA
14:00-16:00	TÉRMINOS Y CONDICIONES
16:00-16:30	RECESO
16:30-18:30	TÉRMINOS Y CONDICIONES

REV 1

SUMINISTROS
PROGRAMA

SÁBADO 5; 23 de mayo de 1998

HORAS	CONCEPTO
8:00-8:30	DESAYUNO
8:30-10:30	ADQUISICIONES
10:30-11:00	RECESO
11:00-13:00	ADQUISICIONES Y OTROS TEMAS
13:00-14:00	COMIDA
14:00-16:00	CONTROL
16:00-16:30	RECESO
16:30-18:30	CONTROL
18:30-19:30	APOYO DE LA COMPUTACIÓN

TECNOLOGÍA E INGENIERÍA BÁSICA Y DE DETALLE

- CONTROL
  - CUMPLIMIENTO DE LOS PROGRAMAS
  - AVANCE DE LOS DOCUMENTOS
  - AVANCE DEL PROYECTO. PARÁMETROS DE MEDICIÓN
  - COSTOS EROGADOS Y FALTANTES PARA TERMINAR LA INGENIERÍA
  - CAMBIOS DE ALCANCE NEGOCIADOS Y POR ACORDAR
  - ESTADO DE LA FACTURACIÓN
  - REPORTE MENSUAL

4. APOYO DE LA COMPUTACIÓN
   - EQUIPO
   - PROGRAMAS
   - BASES DE DATOS
   - INTERNET E INTRANET

SUMINISTROS

1. OBJETIVOS

2. ORGANIZACIÓN

- ALCANCE DEL TRABAJO
- LISTAS DE MATERIALES , EQUIPOS Y SERVICIOS
- PROGRAMAS DE EJECUCIÓN Y DE RECURSOS
- ORGANIGRAMA
- ESTIMADO DE COSTO
- REPORTES DE AVANCE , COSTOS , FACTURACIÓN Y RECURSOS
- PROCEDIMIENTOS ADMINISTRATIVOS

3. BASES PARA EL DESARROLLO

- SELECCIÓN DE PROVEEDORES
  - INVITACIONES A PRECALIFICAR
  - CURRICULA
  - VISITAS A OFICINAS , TALLERES , LABORATORIOS Y CERTIFICACIÓN
  - REFERENCIAS DE CLIENTES
  - LISTA FINAL DE PROVEEDORES

- TÉRMINOS Y CONDICIONES
  - DESCRIPCIÓN DEL PROYECTO
  - CONDICIONES AMBIENTALES
  - FECHAS CLAVE
  - PROCESO DEL CONCURSO
  - ALCANCE DEL TRABAJO Y EXCEPCIONES
  - CUESTIONARIOS Y DOCUMENTOS A ENTREGAR CON LA OFERTA
  - FORMA DE PAGO Y ANTICIPOS
  - RESPONSABILIDADES Y GARANTÍAS
  - SEGUROS Y FIANZAS
  - ENTREGA Y APROBACIÓN DE DOCUMENTOS DEFINITIVOS
  - SEGUIMIENTO
  - VISITAS DE INSPECCIÓN
  - PRUEBAS DE EQUIPOS Y MATERIALES
  - AUTORIZACIÓN PARA EMPAQUE Y EMBARQUE

- ADQUISICIONES
  - INVITACIONES A COTIZAR
  - ESPECIFICACIONES TÉCNICAS
  - CRITERIOS PARA LA ADJUDICACIÓN DEL CONTRATO
  - EVALUACIÓN DE OFERTAS
  - NEGOCIACIONES CON EL PROVEEDOR RECOMENDADO
  - FIRMA DEL CONTRATO
  - NUEVAS MODALIDADES DE ADQUISICIÓN

- COMUNICACIÓN INTERDISCIPLINARIA , CON OTRAS ÁREAS DEL PROYECTO Y CON EL CLIENTE
- LECCIONES APRENDIDAS Y DOCUMENTACIÓN
- JUNTAS

4. CONTROL

   - CUMPLIMIENTO DE LOS PROGRAMAS
   - AVANCE DE LOS SUMINISTROS
   - AVANCE DEL PROYECTO. PARÁMETROS DE MEDICIÓN
   - COSTOS EROGADOS Y FALTANTES PARA TERMINAR LOS SUMINISTROS
   - CAMBIOS DE ALCANCE ACORDADOS Y POR NEGOCIAR
   - ESTADO DE LA FACTURACIÓN
   - REPORTE MENSUAL INCLUYENDO COMPARACIÓN DE COSTOS DE LOS SUMINISTROS

5. APOYO DE LA COMPUTACIÓN

   - EQUIPO
   - PROGRAMAS
   - BASES DE DATOS
   - INTERNET E INTRANET

DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

Módulo III "Suministros"
Del 21 al 23 de mayo.

An Introduction to the Elements of Procurement

Palacio de Minería
1998.

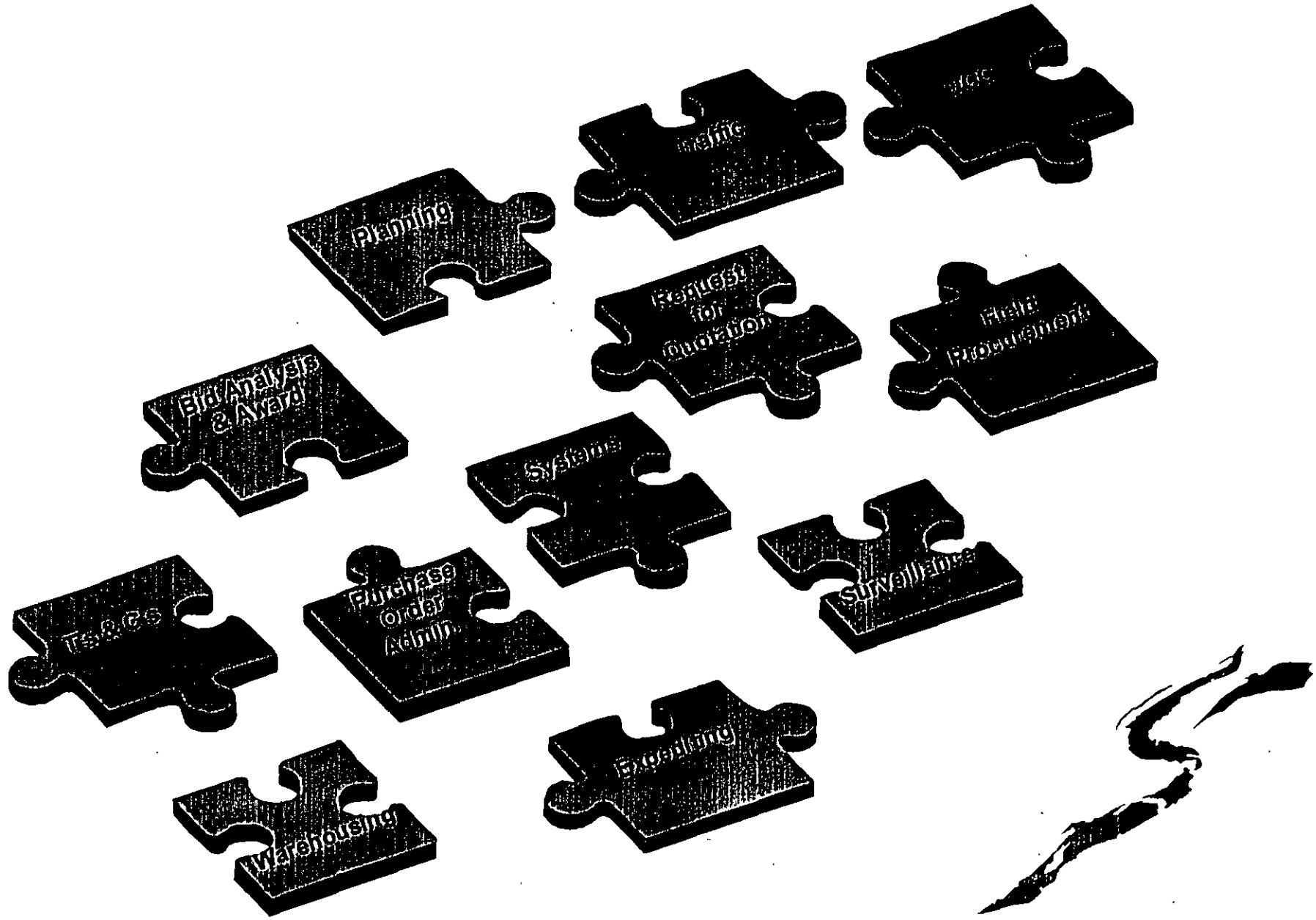
PROCUREMENT 101

An Introduction to the Elements of Procurement

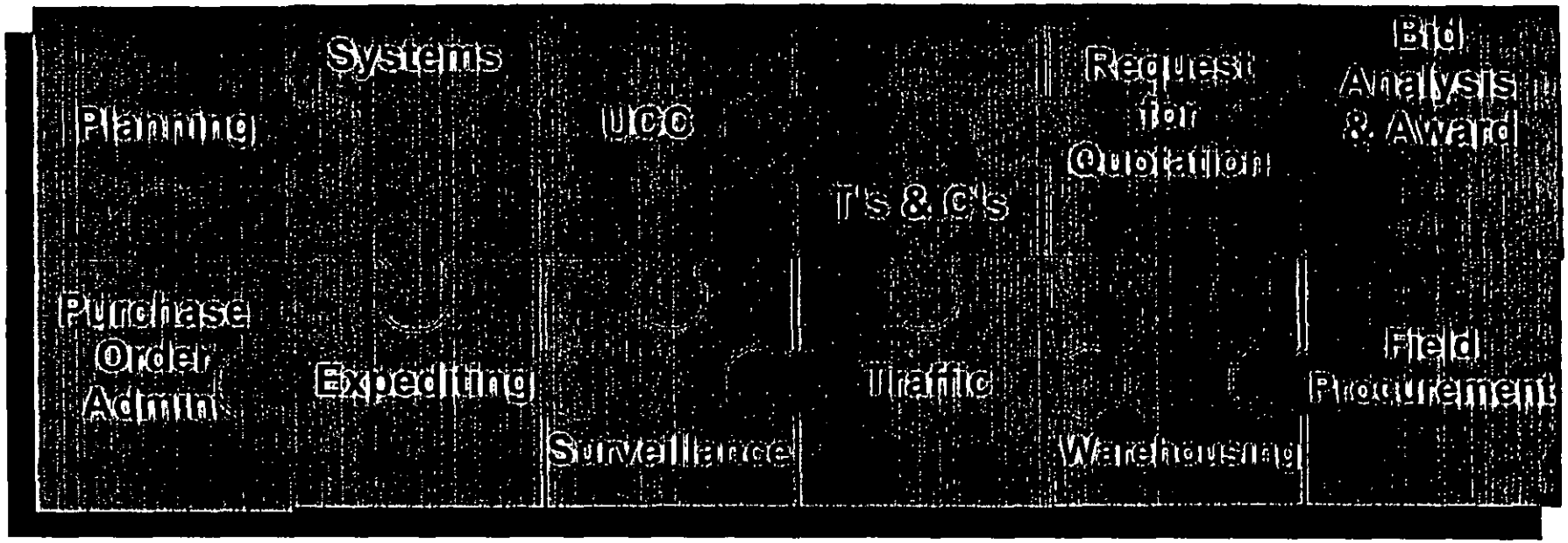
P101 Introduction

- Safety Topic
- CPI Topic
- Fire Exits
- Messages
- Notes
- Wash Rooms
- Attendee Record

Procurement 101

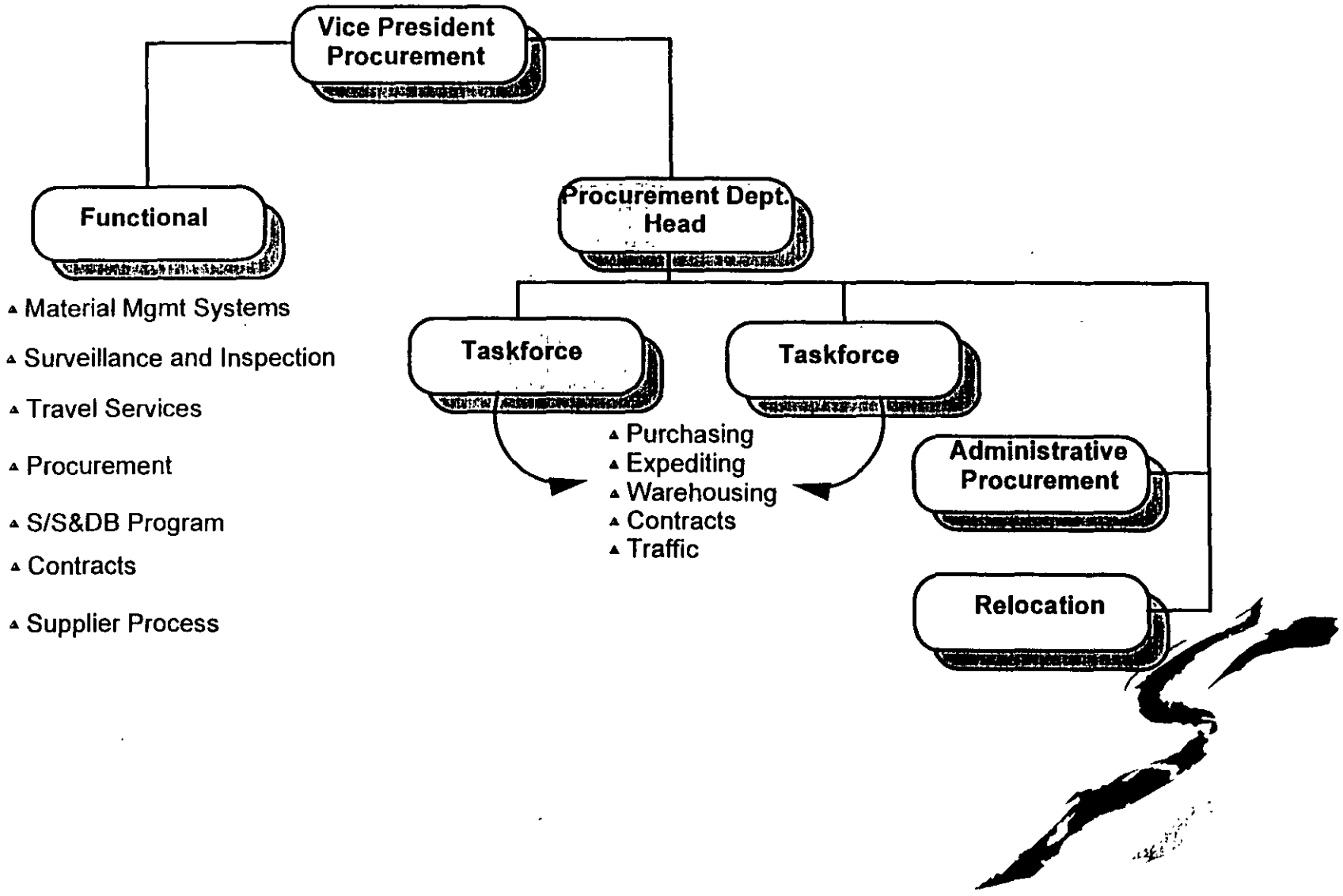


Procurement 101



FILE:

Procurement Organization



P101 Introduction

Insert Procurement Functional Personnel Matrix and / or Local Procurement Department Functional Matrix

P101 Course Agenda

Module 1	Project Procurement Planning
Module 2	Procurement Systems Overview
Module 3	Uniform Commercial Code (UCC)
Module 4	Terms and Conditions
Module 5	Request for Quotation
Module 6	Bid Analysis and Purchase Order Award
Module 7	Purchase Order Administration
Module 8	Expediting
Module 9	Surveillance
Module 10	Traffic
Module 11	Warehousing
Module 12	Field Procurement (Jobsite)

- Each module will be completed with a Module Review Exercise

PROCUREMENT 101

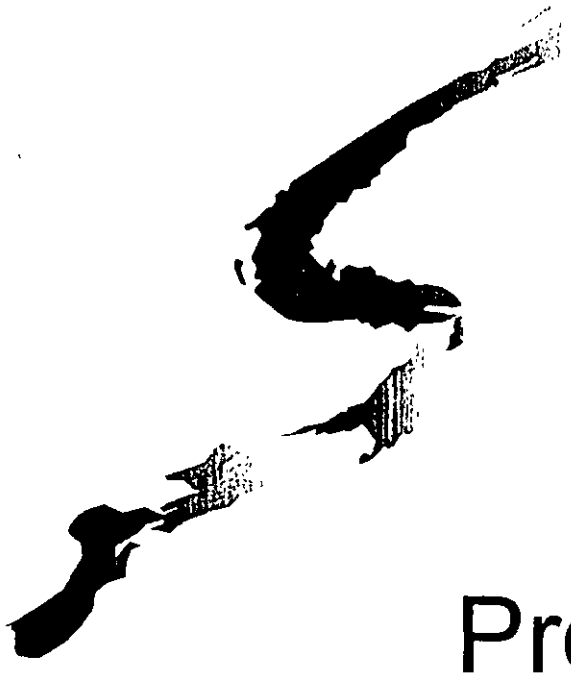
An Introduction to the Elements of Procurement

DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

Módulo III "Suministros"
Del 21 al 23 de mayo.

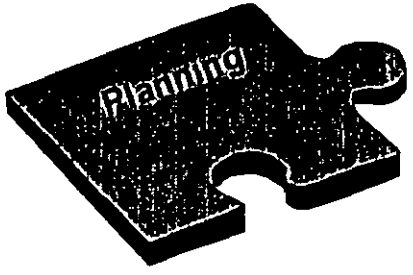
Project Procurement Planning

Palacio de Minería
1998.



P101
MODULE ONE

Project Procurement Planning



MODULE 1
Project Procurement Planning

Purpose: To provide a general understanding of how proper planning on a project contributes to successful project procurement execution services with an emphasis on:

A. The Importance of Planning
B. Project Planning
C. Ethics
D. Module Review Exercise

A. The Importance of Planning

What is it? Webster says a plan is a method of achieving an end.

Why plan?

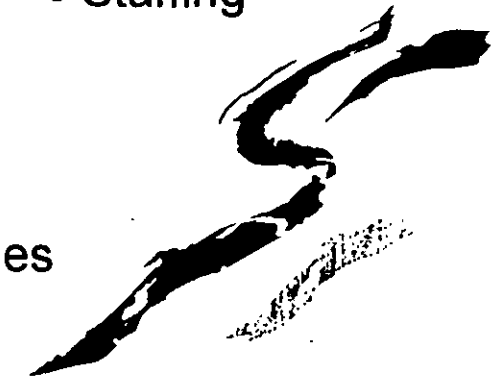
- To streamline and improve execution
- On a typical "fast track" project we may have 80 to 400+ people that need to "march to the same drum"
- To provide services to our clients which are better, safer, cheaper and faster

A Procurement Plan addresses how we will perform all (or some) of the following functions:

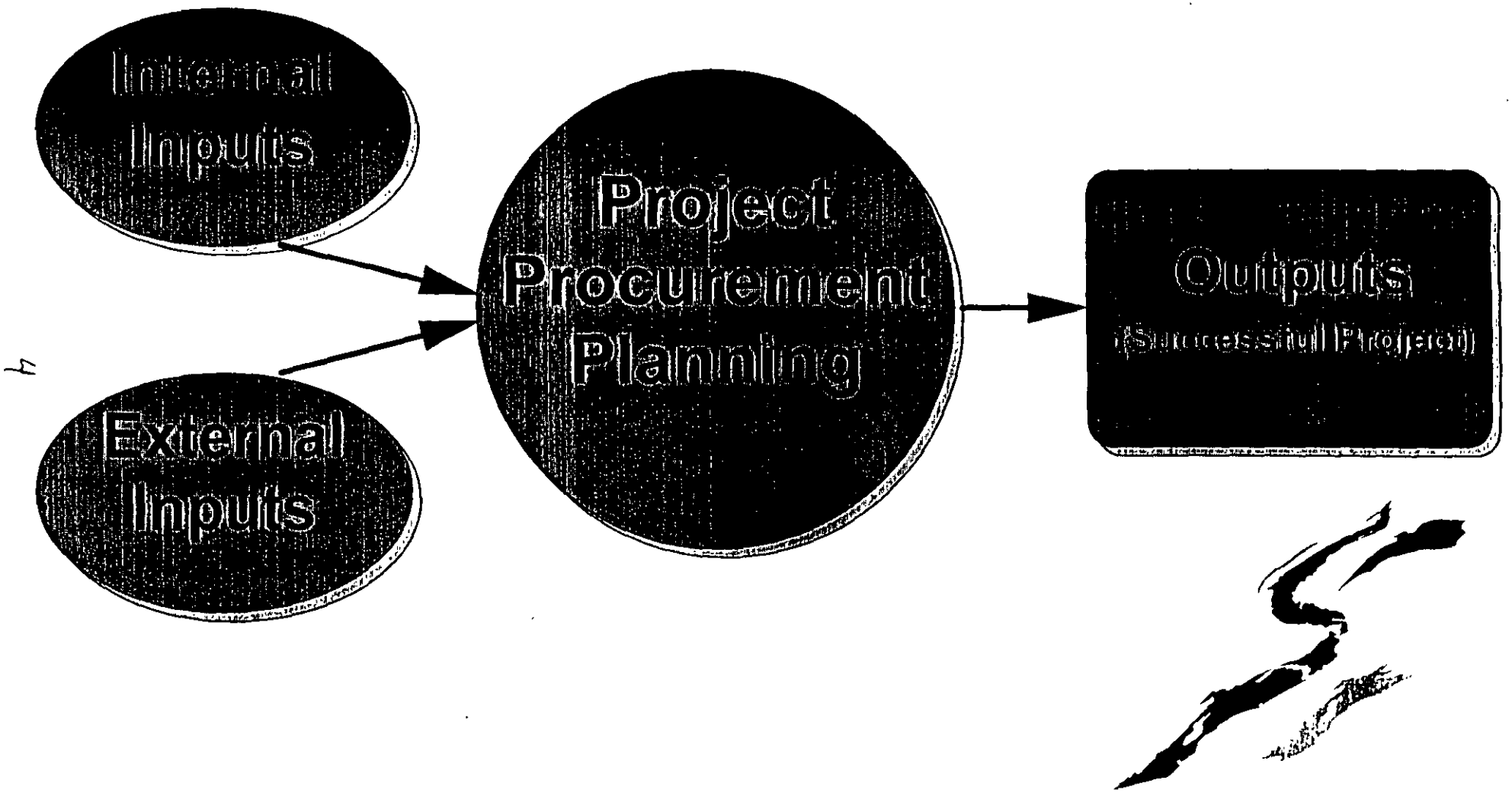
- Scope of Services
- Work Processes
- Field Procurement
- Material Control
- Supplier Selection
- Minority Business
- Systems
- Contracting
- Warehousing
- Surveillance
- Traffic
- Staffing

Where do we look for guidance?

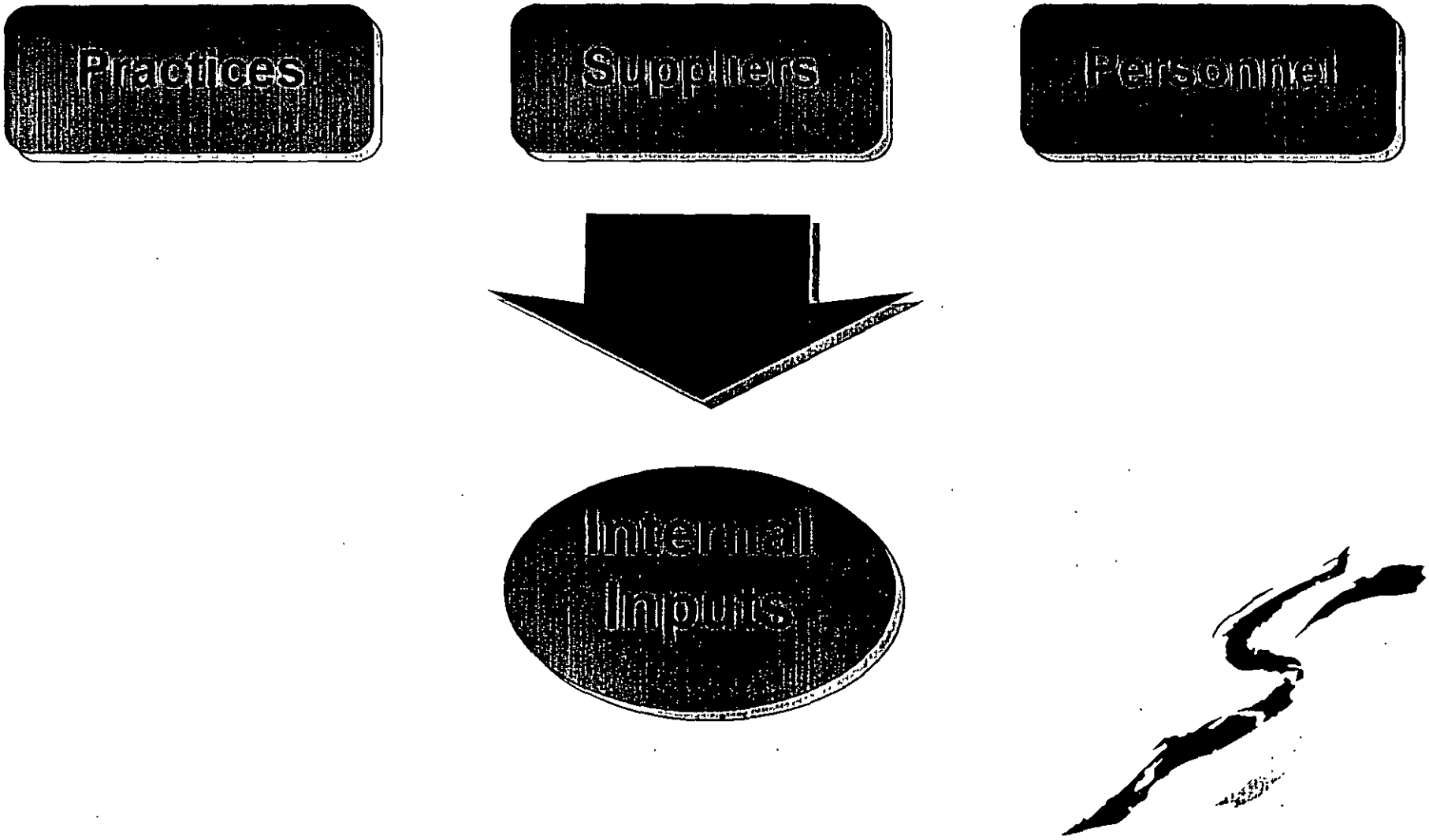
- Procurement Practices Manual
- Experience from Past Projects
- OPG - Operating Principles Guidebook



B. Project Procurement PLANNING



B. PROJECT PROCUREMENT PLANNING



B. Project Procurement Planning

Practices | Suppliers | Personnel

- Recommendations and Guidelines to use in our normal business day.
  - Procurement Practices Manual
  - Contracts Management Practices Manual
  - Warehouse Practices Manual
  - SQS User Reference Guide

B. Project Procurement Planning

Practices | **Suppliers** | Personnel

Where do we look to assist in supplier consideration?

- Key Suppliers
  - Contractual agreements between Fluor Daniel and Supplier.
  - Demonstrated leaders in their commodity.
  - Lowest total installed cost and best deliveries.
  - Early involvement to reduce redundancy between engineering and order entry.
- Client Contractual / Preferred Suppliers
- Technically Specific Suppliers
- Regional Supplier Data Base (provides opportunity to purchase locally)

How are suppliers validated?

- Supplier Ratings
- Shop Surveys (SQS)
- Caution List
- Financial References (Dun & Bradstreet)

How do we establish a Procurement strategy?

- Determine who supplies material and equipment (FD or ?)
- Review the types of packages with the suppliers being considered
- Determine single source vs competitive bid approach per package

B. Project Procurement Planning

Practices | Suppliers | **Personnel**

Personnel

Personnel are provided to the PPM by the Department Manager. Match the experience level and the number of people to the work.

- Example: On a project where we have 110 purchase orders and 5 contracts, we probably need a stronger full time purchasing level of expertise and part time assistance from contracts administration specialists.

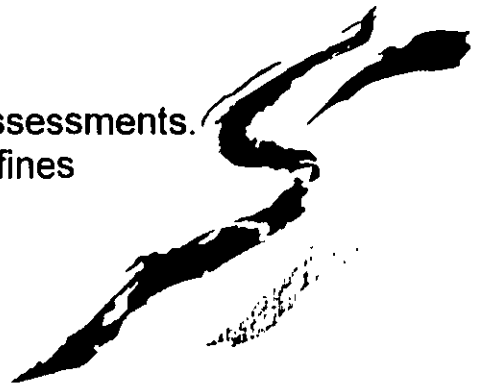
Performance Assessments

Roles and Responsibilities

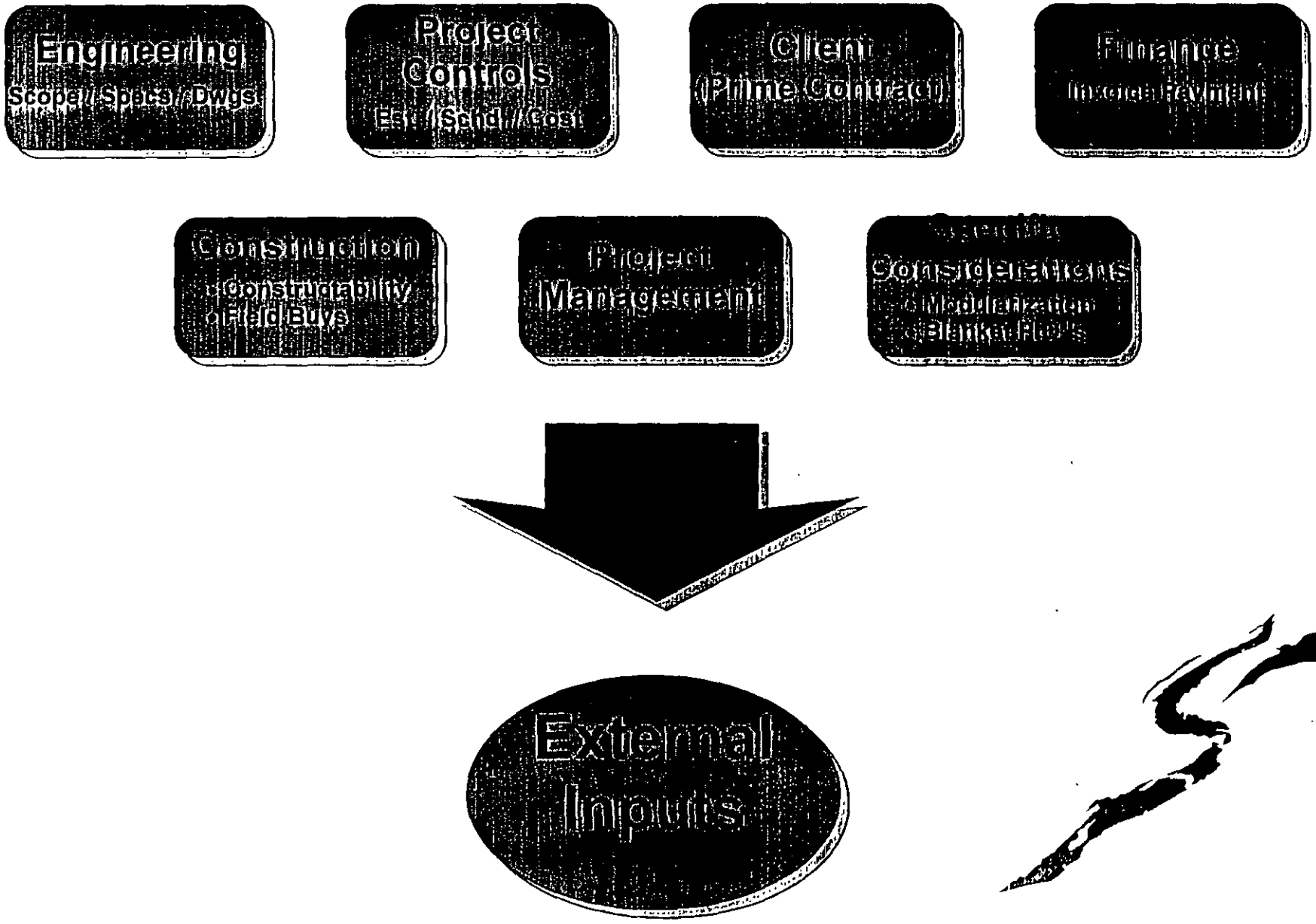
The roles and responsibilities of employees must be defined.

Expectations

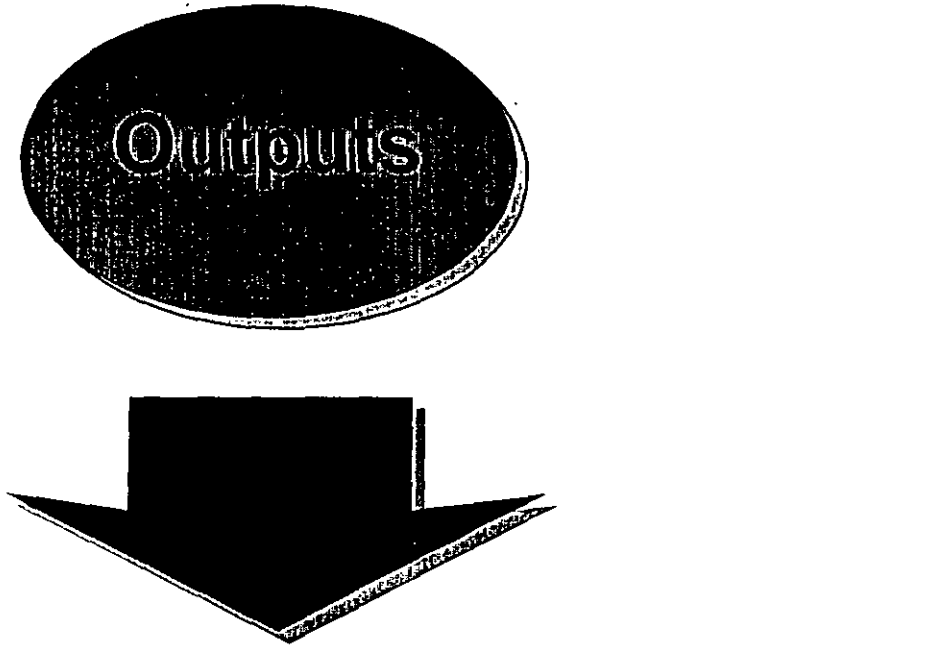
It is of vital importance to define expectations of employees during performance assessments. This process defines goals which the employee can pursue. This process also defines milestones upon which employees can be measured.



B. Project Procurement Planning



B. Project Procurement Planning



B. Project Procurement Planning

Activity Quality Plan

Plans

- ✓ Activity Quality Plan - AQP
  - A list of auditable key activities
- ✓ Plans
  - Material and Procurement Plan - describes scopes of services
  - Material Control Plan
    - ► Work process from engineering to field material issuance
    - ► MTO and bump factor philosophy per discipline
  - System Implementation Plan (see module 2)
    - ► Document systems that will be used
    - ► Develop work flow diagram as it relates to work process
  - Logistics Plan
    - ► FOB Terms
    - ► Material routing strategy
    - ► Special load considerations
  - Surveillance
    - ► Identifies the level of surveillance / inspection
    - ► Identifies orders to be inspected
  - Staffing Plan / Budget Estimate (3 ways to develop)
    - ► Estimate the number of hours per package per discipline
    - ► Estimate effort hours based on schedule (man-load process)
    - ► Procurement effort, approximately 8-10% of total home office.

Estimate Number of Hours Per Discipline

Identify the services and approx. hours required for each service:

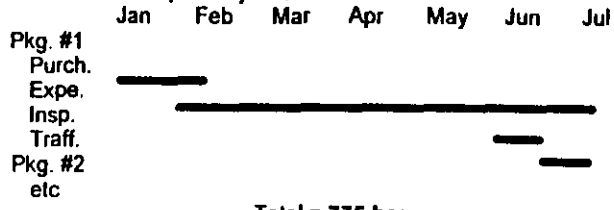
Purchase / Expedite	25 hours
Traffic	5 hours
Inspection	10 hours
Total	40 hours

Identify the number of packages and multiply by hours / service or assume total hours / package

20 equipment P.O.'s @ 40 hours / package = **800 hours**

Estimate Effort Hours Based on Schedule (man-load process)

Plot effort hours per Project Schedule



Total = 775 hours

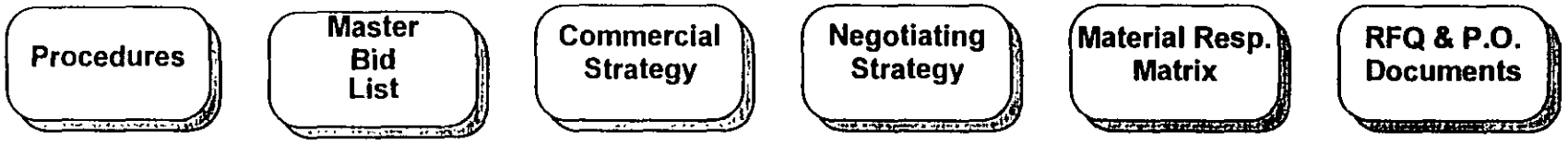
Estimate Based on 10% of Total Home Office Hours

Total engineering hours = 8000

10% of 8000 = 800 hours

Total = 800 hours

B. Project Procurement Planning



- ✓ Procedures - state how plans will be accomplished (required for each plan)
- ✓ Master Bidders List
  - Documents pre-qualified bidders from the supplier selection process
- ✓ Commercial Strategy
  - Incorporate flow down requirements from Prime Contract into RFQ and P.O. documents (i.e. warranty, insurance, agents, tax)
- ✓ Negotiating Strategy Philosophy
  - Schedule, payment terms, cost, spares, start-up services, shipping terms
- ✓ Material Responsibility Matrix
  - Identifies all material to be purchased and who is responsible (i.e. Fluor Daniel, Client, Contractor). Includes determining project blanket P.O. requirements (i.e. scaffolding, field purchases).
- ✓ RFQ and P.O. Documents
  - Start with master clauses and modify for project requirements (See Module 5)

B. Project Procurement Planning

Outputs

Who is responsible for Procurement outputs?

- Development
  - ✓ Project Procurement Manager
- Implementation
  - ✓ Project Procurement Team

13

Do Procurement outputs change during the execution of a project? Yes

- As scope deviates, the project team develops pro-active resolutions and revises the plans accordingly.
- Work process improvement

* It is always beneficial to keep auditing in mind when developing project plans and procedures. This can help streamline the auditing process.

* Always develop plans and procedures to match the requirements of the particular project. It is of no benefit to simply copy procedures from manuals or previous projects if they don't match the current situation.

C. Ethics

In Procurement and Contracts, it is our responsibility as business professionals to establish and communicate the ethical standards by which all other organizations can follow.

- ✓ Relations with Suppliers and Contractors
  - Good relations between Flour Daniel and its suppliers and contractors can only be maintained through fair and courteous treatment.
- ✓ Confidential Information
  - Technical
  - Commercial
- ✓ Conflicts of Interest
  - Employees should disclose any conflicts of interest and voluntarily remove themselves from situations that could be deemed as a conflict of interest.
- ✓ Gratuities
  - Employees have the responsibility to ensure that they do not become obligated to any supplier or contractor by the acceptance of gifts, gratuities or special entertainment.
- ✓ Ethics Hotline
  - 800-654-3360 (within California only)
  - 800-223-1544 (outside California)

The Ethics Hotline is for the confidential reporting of suspected unethical or illegal conduct

D. Module Review Exercise

Fluor Daniel has been awarded a new "E.P.CM." project. The project team has been identified and has had the first alignment session. The home office estimate has been established for all services. All plans, procedures, work processes and systems have been developed and set up. Scope definition identified that some of the following types of packages would be issued:

1. ANSI centrifugal pumps

2. Chilled Water centrifugal pumps (10 pumps P101 - P110, RFQ #GMS-A-001).

3. Carbon Steel and Stainless Steel pipe fabrication

4. Pipe, Valves and Fittings

What type of purchasing strategies should be considered?

D. Module Review Exercise

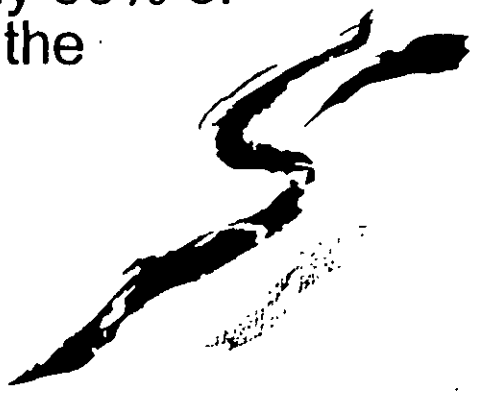
Answers

1. Single source with Key Supplier (Goulds) for ANSI centrifugal pumps. (Obtain sole source approval)

2. Competitive bid the chilled water centrifugal pumps with 3 - 4 bidders.

3. Split the carbon steel and stainless steel pipe fabrication into separate packages and competitively bid them.

4. Home office to buy all valves. Home office to purchase bulk pipe and fittings from the first MTO representing approximately 80% of material required. Sub-Contractor should purchase the balance. Single source Key Supplier (McJunkin).



DIPLOMADO SOBRE GERENCIA DE PROYECTOS
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Procurement Systems Overview

Palacio de Minería
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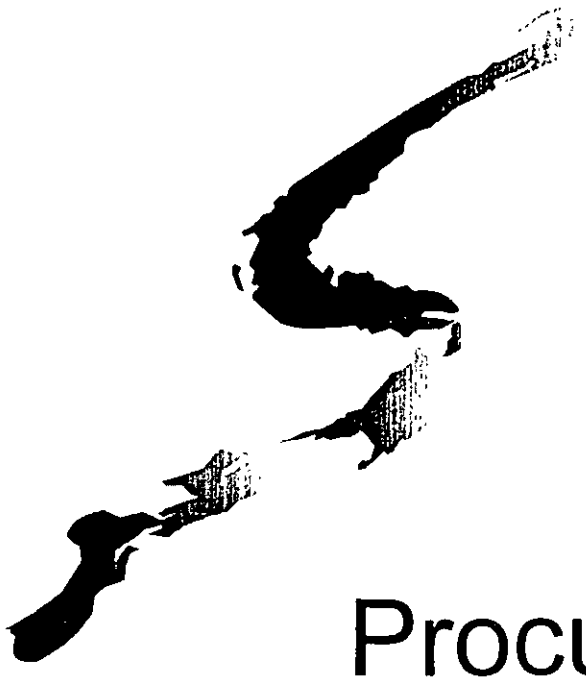
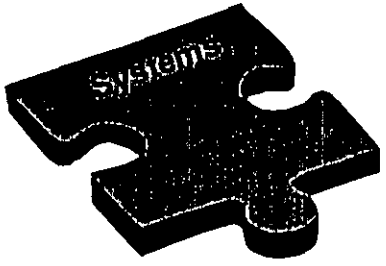


P101
MODULE TWO

Procurement Systems Overview



MODULE 2
Procurement Systems Overview

Purpose: To provide an overview of system implementation into the project material management strategy.

A. These are the Systems
B. Material Management
C. Project System / Work Process Integration
D. Module Review Exercise

A. These are the Systems

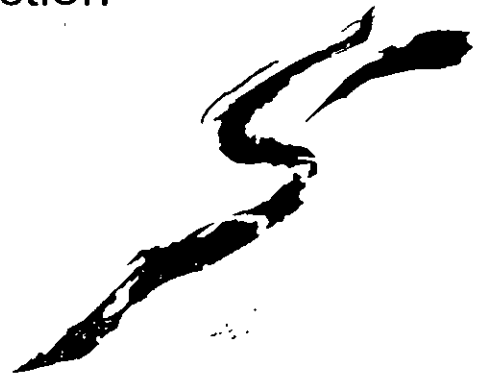
1. Material Management Tools (MMT)
   A modular based system that facilitates the integration of material management functionality into the procurement work process.

2. Global Material System (GMS)
   Provides projects with the ability to manage and control all aspects of the material cycle.

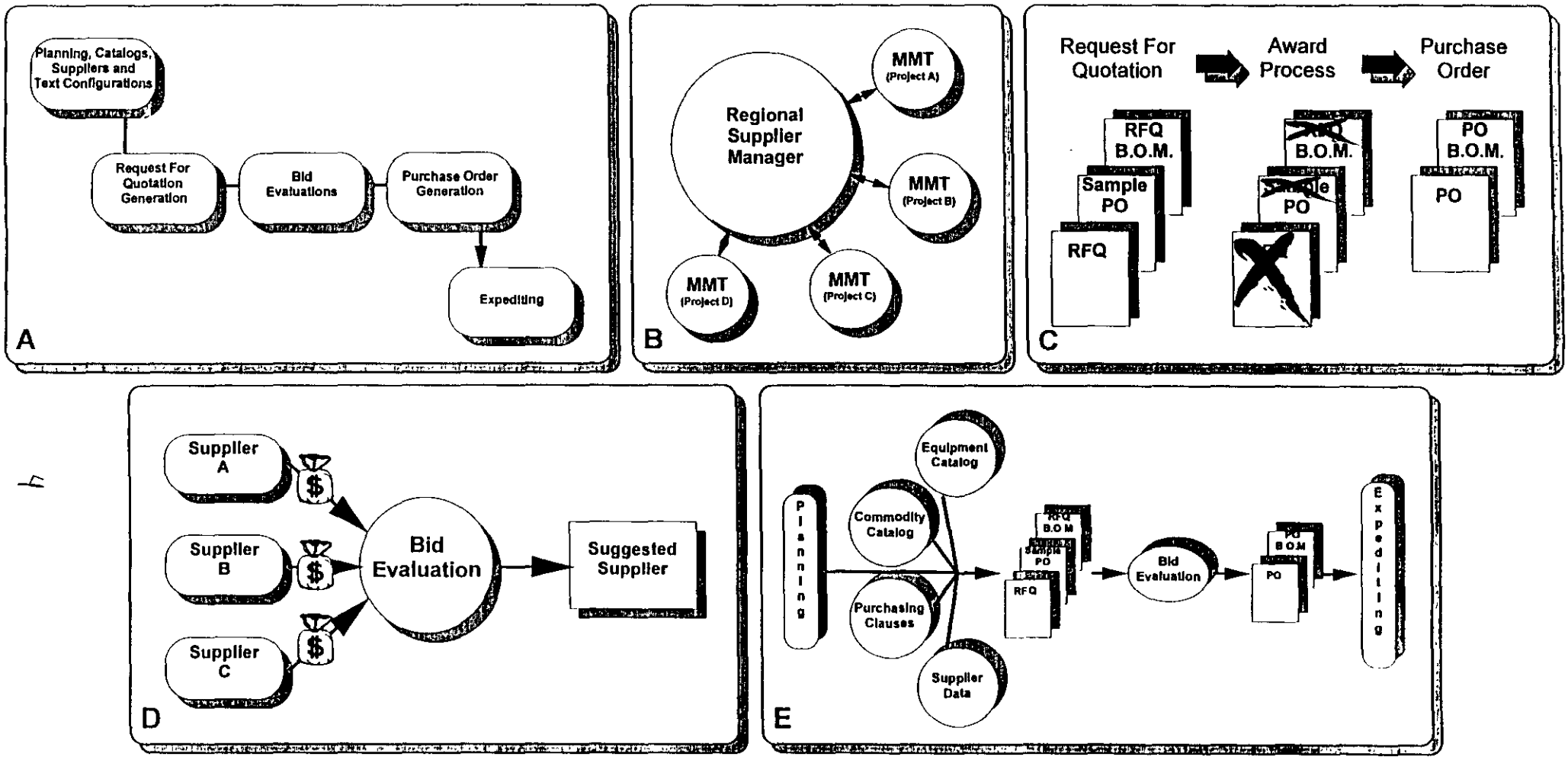
3. Global Supplier Manager (GSM)
   Global rating system for suppliers and contractors.

4. Material Requirements Planning (MRP)
   Incorporates requirements, schedule and inventory into a 'what if..." scenario analysis for expediting on construction work flow decisions.

5. Shop Inspection Status Reporting (SQSS)
   Vendor conformance monitoring system.

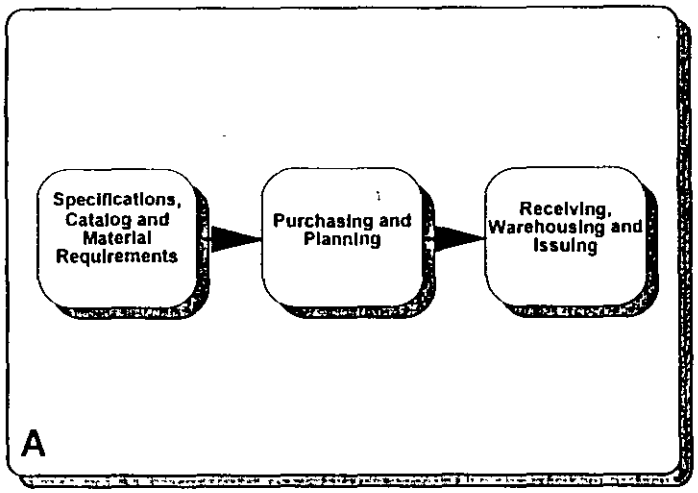


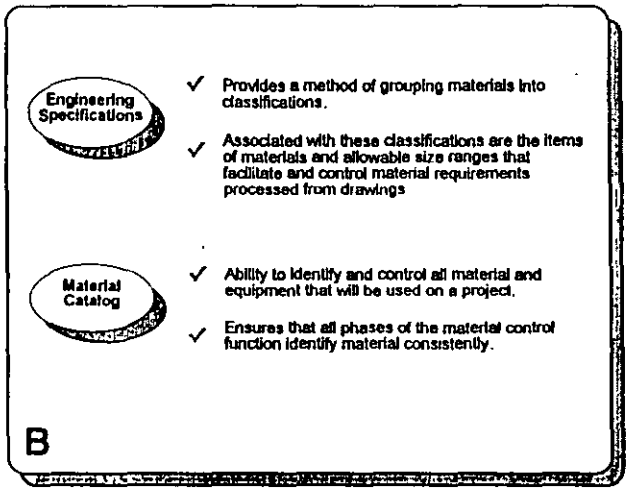
1. Material Management Tools (MMT)

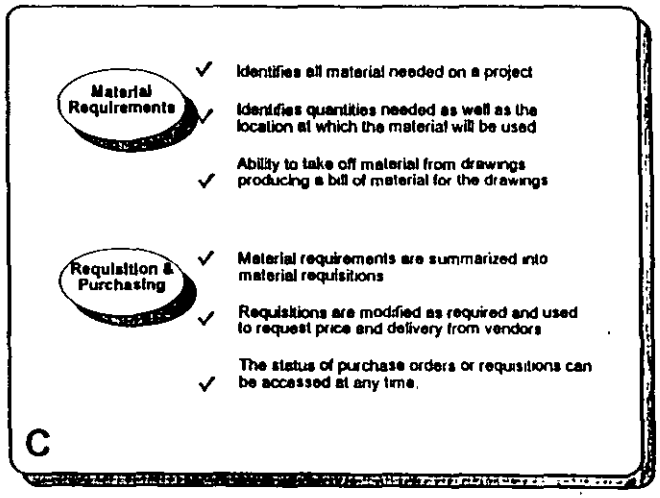


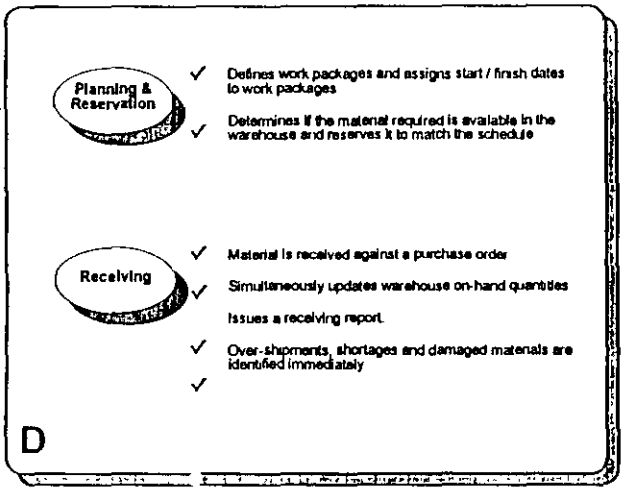
A. MMT work process flow (general)
B. MMT's utilization of Regional Supplier data
C. MMT purchasing document flow
D. MMT bid evaluation
E. MMT work process flow (detailed)

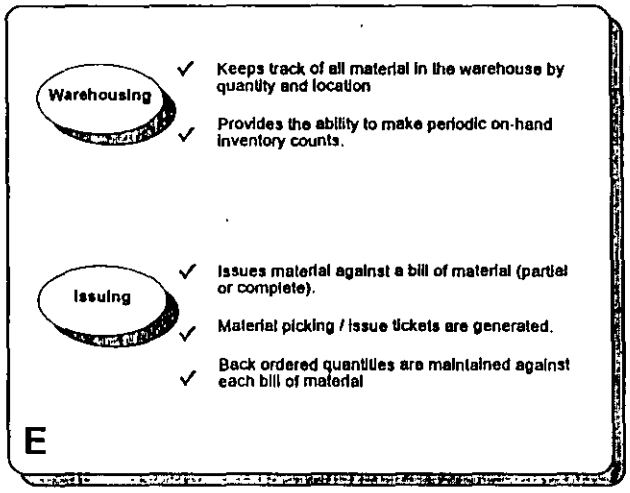
2. Global Material System (GMS)

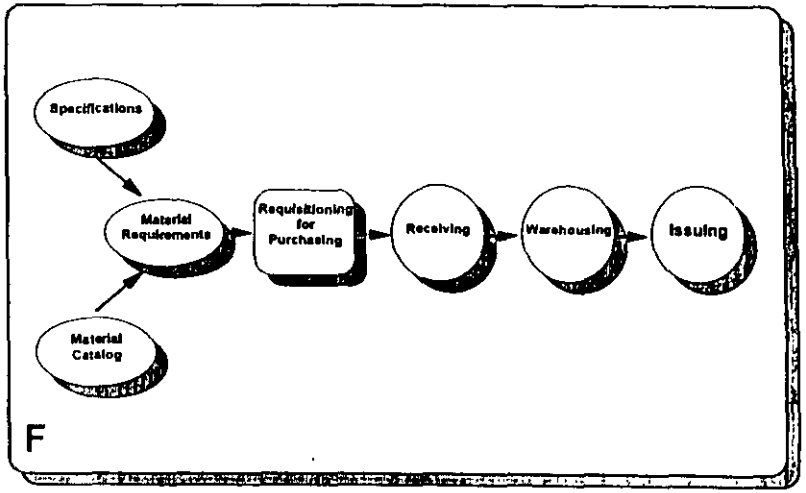






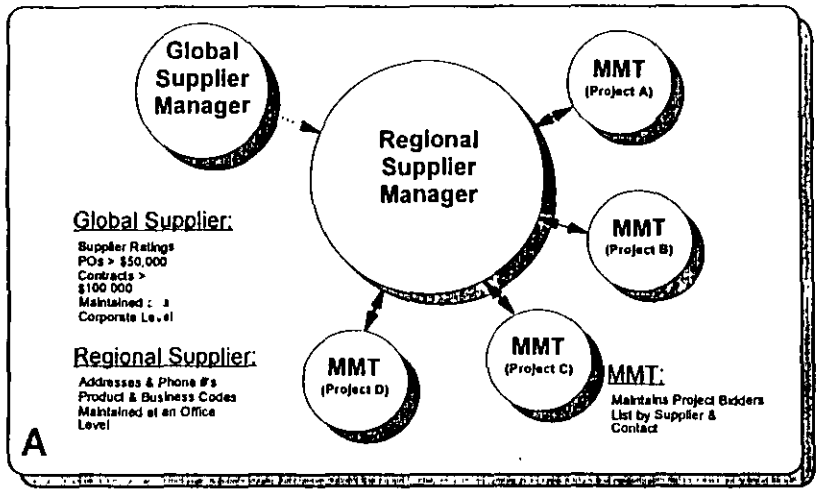


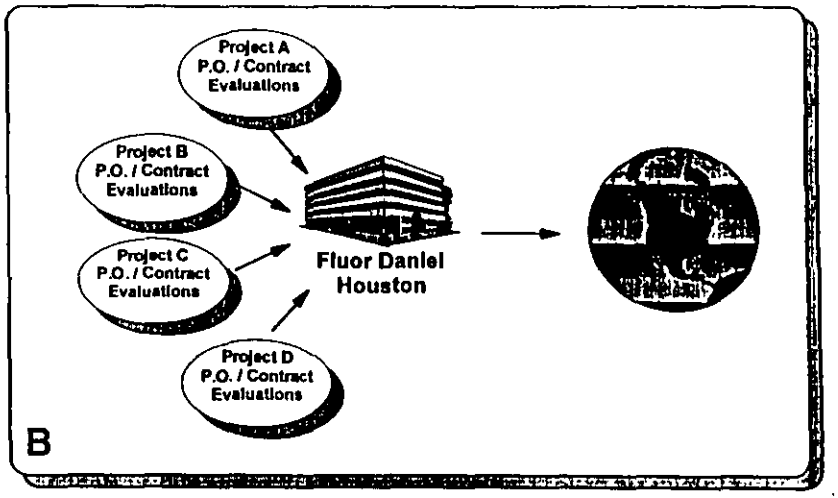


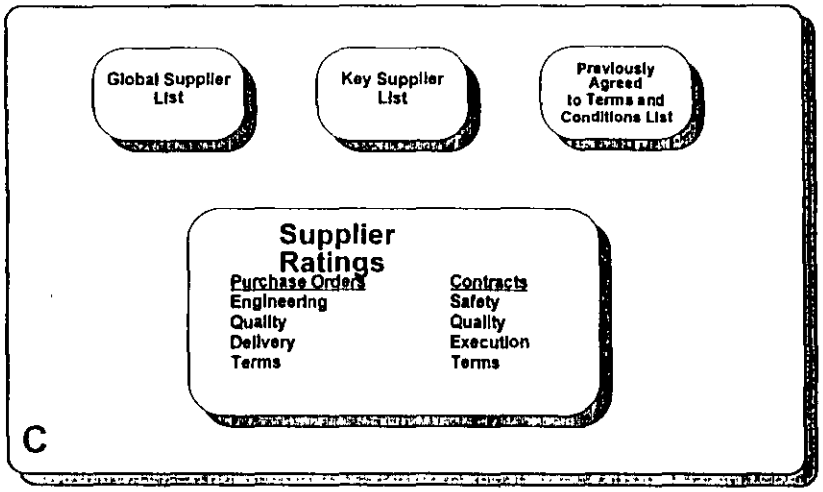


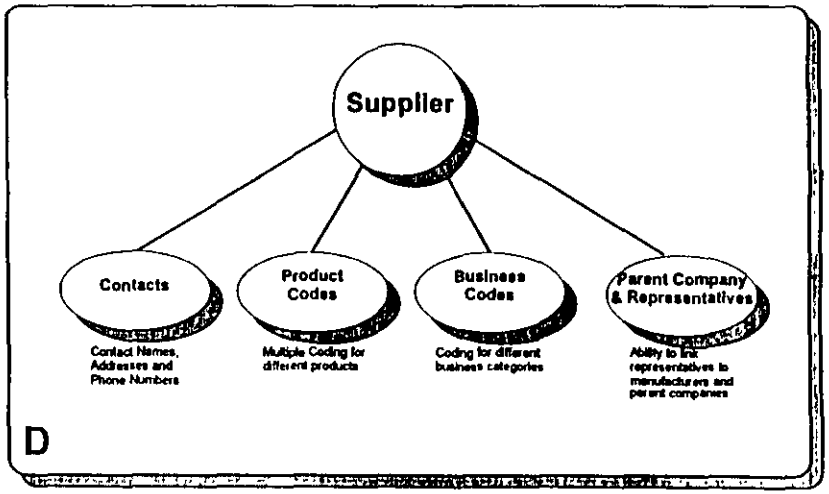
A. GMS work process flow (general)
B. Material Specifications and Cataloging
C. Material Takeoff and Purchasing
D. Warehousing and Issuing
E. GMS work process flow (detailed)

3. Global Supplier Manager (GSM)



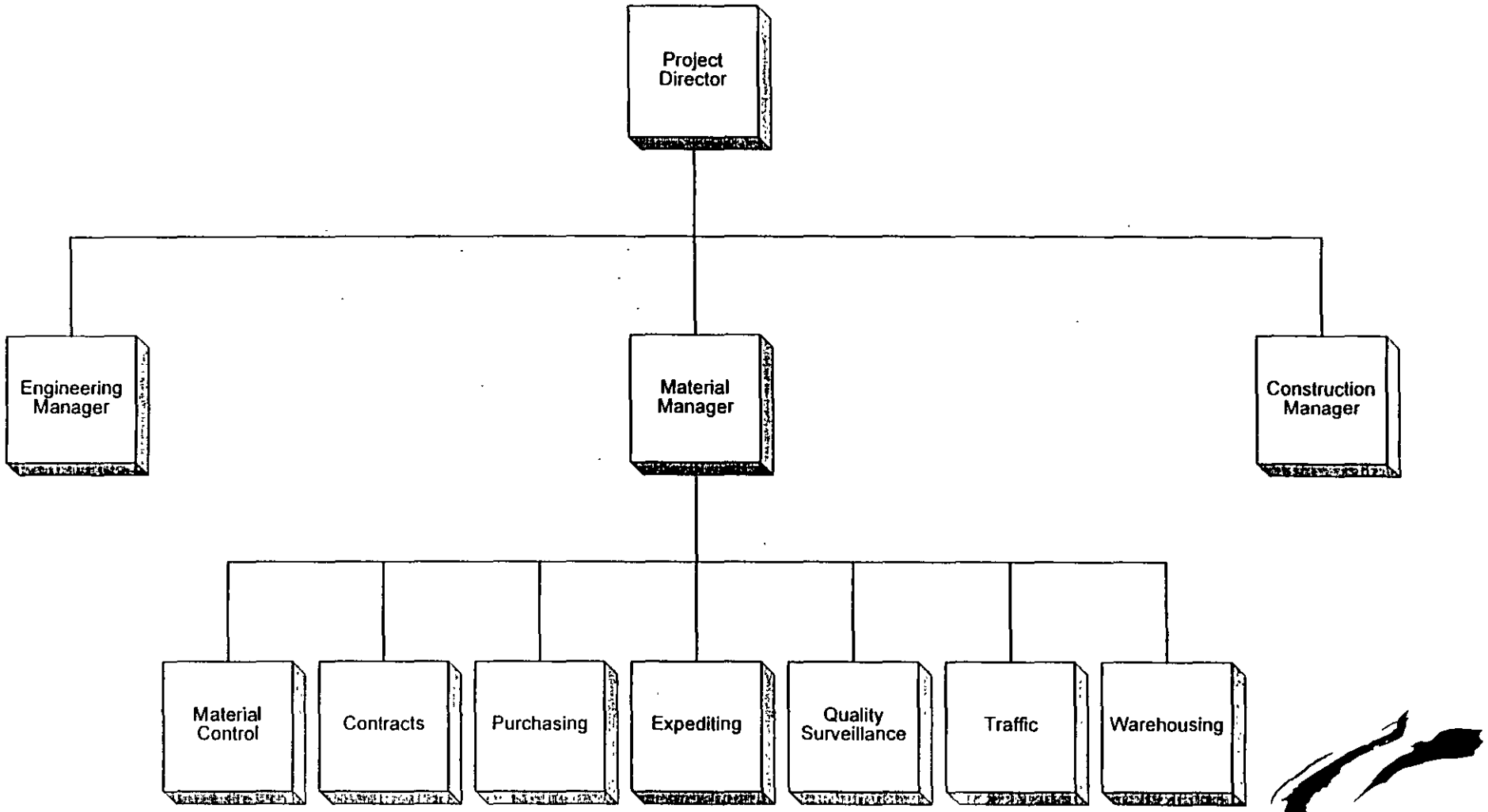




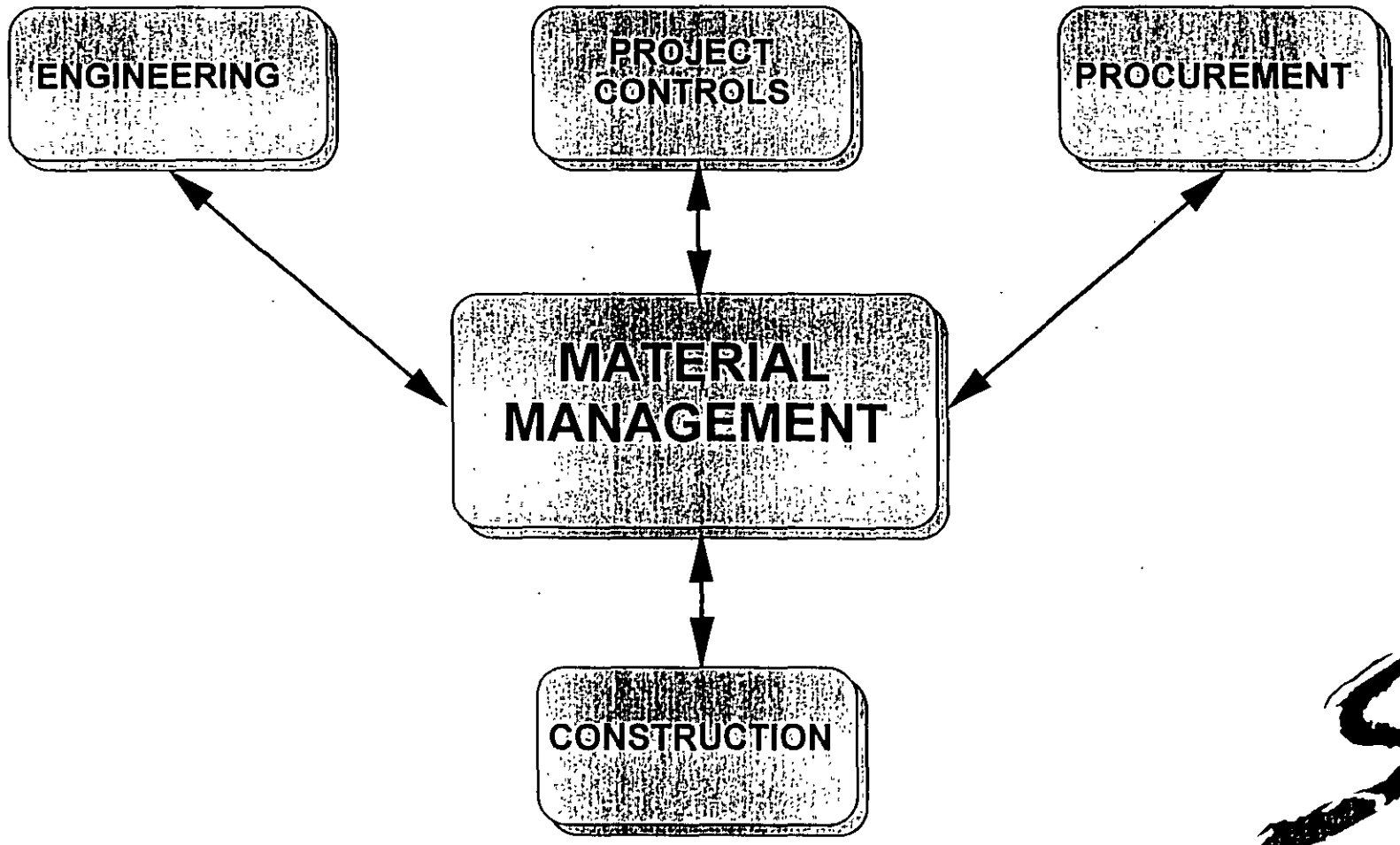


A. Supplier Management
B. Supplier rating data flow
C. Global Supplier Manager modules
D. Global Supplier Manager key information

B. Material Management



B. Material Management (cont.)



B. Material Management (cont.)

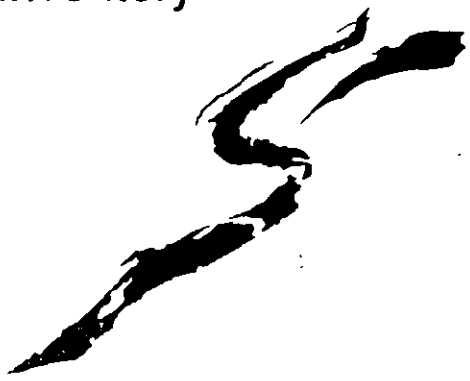
Through the use of Material Management as a common link, information is shared between the major project functions:

- Project Engineering
- Project Procurement
- Project Controls
- Construction / Jobsite

Accountability, consistency and the elimination of duplicate efforts are all benefits of Fluor Daniel Material Management.

The implementation of Material Management can produce significant cost savings over the life of a project by:

- Reducing Material Surplus
- Reducing Labor Hours
- Reducing Storage Costs
- Reducing On Hand Inventory (J.I.T.)



B. Material Management (cont.)

Through the use of Material Management Tools Fluor Daniel has the ability to implement thorough and complete material management. This process can be structured on a "cradle to grave" basis or used anywhere in between.

Effective Material Management begins with the design stage of engineering. Data is downloaded from CAD systems and initial client equipment lists. If electronic transfer is not available this information can always be incorporated manually. Engineering, Project Controls, Procurement and Construction all benefit from and contribute to the information contained in the Material Management Tools.

Engineering
Provides both projected and historical costs as well as priority of design / engineering efforts to meet project schedules.

Project Controls
Track costs and the progress of critical and long lead equipment packages.

Procurement
Schedule and track the progress of both design and purchase of equipment and bulk materials.

Construction
Receives and issues both equipment and bulk materials at the jobsite. Provides material status / forecast information for work package planning / verification.

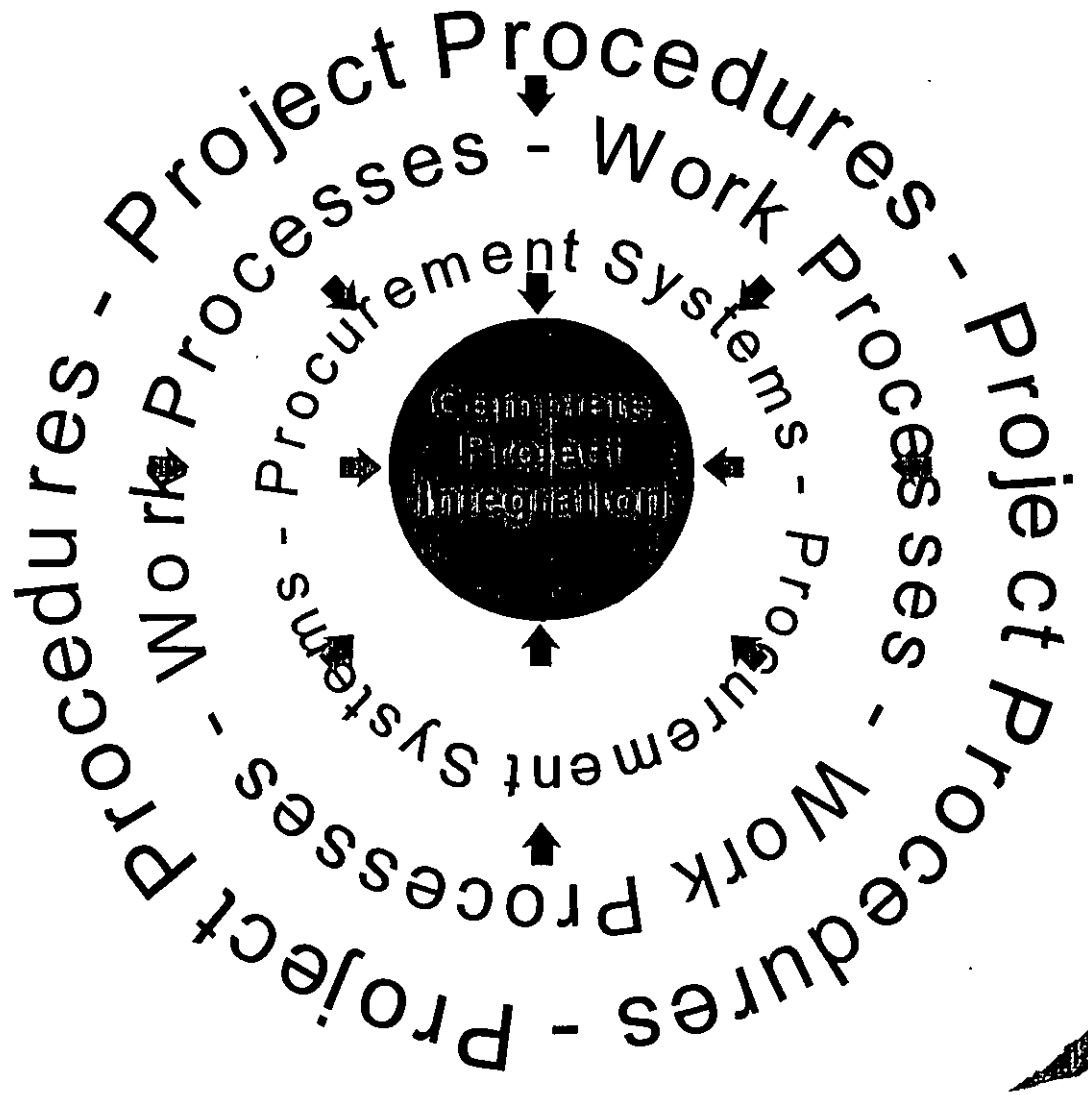
Fluor Daniel Material Management provides the essential link between Engineering and Construction by means of consistent information flow. All of the data accumulated in Material Management Tools from the Home Office can be transferred to the Field to continue the material management process.

Through the use of Material Management, projects can take a proactive stance on the progress of material flow from the beginning of a project to its completion.

B. Material Management (cont.)

- ✓ The key to effective Material Management is to efficiently monitor the flow of materials from design and conception to installation at the jobsite.
- ✓ The goal of Material Management is to enable Fluor Daniel to avoid potential problems throughout the life of a project. Fluor Daniel's Material Management Tools can be used to help achieve this goal in a proactive, cost effective and efficient manner.
- ✓ A key point that should not be overlooked is the fact that systems / tools do not manage materials, people manage materials utilizing tools and work processes.
- ✓ Systems are only tools to help manage materials.

C. Work Process & System Integration



C. Work Process & System Integration

Procedures
- Planning - How does the project need to be managed
- Work Process
- Systems to support the work process
- Training/Communication
  - Project Management Strategy
  - Work Process Integration
  - Systems

Roles and Responsibilities
- Project Management Team
  - Project Strategy
  - Define Work Processes
- Systems Support
  - Implement the systems to support the project needs
  - Training

Material Manager / Coordinator
- Drives the Work Process
- Controls Material from "Cradle to Grave"

C. Work Process & System Integration

Project Implementation Strategy:

- Alignment
  - ✓ Material Manager with Other Disciplines
- Clauses
  - ✓ RFQ vs PO
  - ✓ Equipment vs Piping vs Electrical vs Instrumentation etc.
- Milestones
  - ✓ Critical / Complex Packages
  - ✓ "Off the Shelf" Packages
  - ✓ Bulk Material Packages
- Numbering & Naming Conventions
  - ✓ Package Numbers
  - ✓ Equipment Numbers
  - ✓ Commodity Numbers
  - ✓ Spares Identification etc.
- Reports
  - ✓ Type of Reports to be Issued
  - ✓ Frequency of Distribution
- Tracking
  - ✓ Types of Equipment to be tracked
  - ✓ Types of Commodities to be tracked
  - ✓ Level of detail
- Consistency
  - ✓ Numbering
  - ✓ Naming
  - ✓ Milestones
- Security
  - ✓ Disciplines Accessing Systems
  - ✓ Levels of Access
- Work Processes
  - ✓ Eliminate Duplications
  - ✓ Improve Performance

D. Module Review Exercise

Given the Module One Review Exercise of four types of packages:

	Package Type	Procurement Strategy
1.	ANSI centrifugal pumps	Single source - Goulds key supplier
2.	Chilled water centrifugal pumps	Competitive bid - 3 to 4 bidders
3.	CS & SS pipe fabrication	Competitively bid
4.	Pipe valves & fittings	Single source - McJunkin key supplier

Answer the following questions:

1. Would all four packages have the same number and type of RFQ / P.O. clauses.
2. Would the same milestones need to be tracked for all packages?
3. What considerations should be made when developing an RFQ and P.O. for receiving and issuing activities?

D. Module Review Exercise

Answers

1. No, there would be a different type RFQ & P.O. with less clauses for the bulk packages vs engineered equipment packages as well as Key Supplier vs competitive bid situations. (this is why a sample "shell" is created from master clauses to streamline execution)
2. No, the same number of milestones would not have to be tracked on all packages.
3. The bill of material should be in enough detail to allow the field to receive items against it.

DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

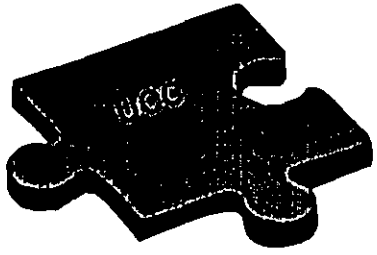
Módulo III "Suministros"
Del 21 al 23 de mayo.

The Uniform Commercial Code (UCC)

Palacio de Minería
1998.

P101
MODULE THREE

The Uniform Commercial Code (UCC)



MODULE 3
The Uniform Commercial Code (UCC)

Purpose: To explain usage of the UCC and highlight certain sections of the UCC as they relate to Fluor Daniel Procurement.

A. The Uniform Commercial Code and Procurement
B. The Formation of Contracts
C. UCC Highlights
D. Module Review Exercise

A. Uniform Commercial Code and Procurement

What is it?

The UCC is a comprehensive compilation of various statutes relating to differing types of commercial transactions, from sales and leases through investment securities and secured transactions. The UCC first became effective in 1954 with the purpose of promoting uniformity in such transactions.

It has been adopted by 49 of 50 states, and excludes the state of Louisiana.

Why is it needed?

To have a common set of terms that govern business transactions in the absence of a signed agreement.

If we have the UCC, then why do we need Fluor Daniel's (P6) terms and conditions?

The UCC is "generic" in nature since it is meant to address a variety of differing businesses. Fluor Daniel's Terms and Conditions cover a number of subjects within the UCC, but ours are specific to the type of work and the risk / liability that we are asked to assume by our clients.

Does it apply to all agreements?

No, it does not apply to contracts involving the performance of services (i.e. construction; repair and maintenance, where labor is a major component).

B. The Formation of Contracts

What is a Contract?

Simply put, it is "an agreement enforceable at law between two or more persons". (the words purchase order and contract are interchangeable)

Contract = Agreement + Consideration

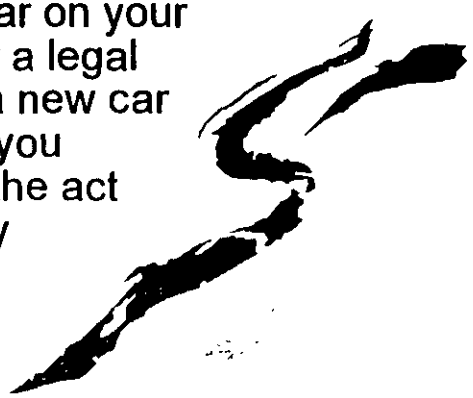
Basic Requirements of a valid contract

1. **An agreement be made between the parties.**

There must be "offer" and "acceptance"
Person making the offer is the "offeror"
Person to whom the offer is made is called the "offeree"
Various rules govern what constitutes an offer, how long the offer is effective, if an offer can be revoked, when acceptance takes place, and what happens if there is a counter offer.

2. **Agreement is supported by consideration.**

For example, I promise to buy you a new car for your birthday. You gladly accept my offer. The problem is that my promise to buy you a car on your birthday is not legally enforceable, You, the offeree, did not suffer a legal detriment; you didn't give anything. Had I promised to give you a new car on your next birthday if you would quit smoking cigarettes, and if you accepted and did quit smoking, you would have performed the act the offeror requested and could legally enforce my promise to buy you a new car on your birthday.



B. The Formation of Contracts

Basic Requirements of a valid contract (CONTINUED)

3. There is a legal capacity to contract..

The parties must have legal capacity to contract or the contract will be avoidable by the party that lacks capacity. For example, suppose that a sixteen year old, a minor, purchases a motor cycle from a twenty two year old neighbor. The contract is legal; there was no fraud; no one took advantage of the other party. Yet under the law, the minor did not have full legal capacity to contract. The minor can change his or her mind and get his or her money back from the seller any time up until the minor reaches the age of majority and for a reasonable time thereafter.

4. The purpose of the contract must be legal.

A contract with a "hit man" to murder your spouse to collect the life insurance money is illegal and certainly would not be enforceable in court. However, the other three requirements were met:

There was an offer and acceptance, thus an agreement.
There was consideration to be paid to the hit man and benefit to be derived by the offerer.
Both parties are adults.

Still, all four of the requirements are necessary for a valid contract.

C. Highlights of the UCC

The following highlights certain aspects of the UCC as they apply to Fluor Daniel Procurement.

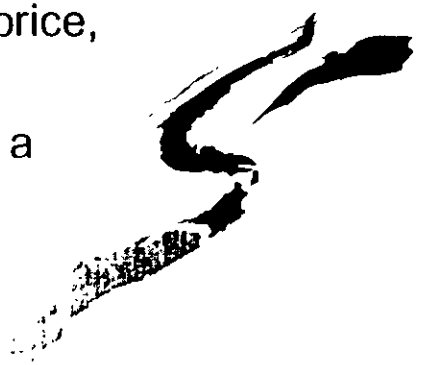
Battle of the forms

Introduction

- We live in the age of preprinted forms (i.e. credit card applications, purchases of major items in stores, automobile purchase)
- In a transaction between companies, usually both have their own forms
- Lawyers are anxious to provide their clients with as much protection as possible through the use of customized forms
- Lawyers place critical language in fine print which is sometimes referred to as "Boiler Plate"

Whose Terms Govern

- Battle of the forms refers to jockeying for position that characterizes an exchange of preprinted forms
- The preprinted forms, the source of "The Battle", are the problem and not the handwritten or typed forms
- Agreement is easily reached on what is being ordered, the quantity, price, and schedule (non preprinted forms)
- Terms in a buyer's standard form will frequently conflict with terms in a sellers standardized form (i.e. buyer includes a term securing warranty protection, the seller has language disclaiming such liability. Both can't win, something has got to give)
- The rules that govern this process are found in UCC-2-207, and are of bewildering complexity.



C. Highlights of the UCC

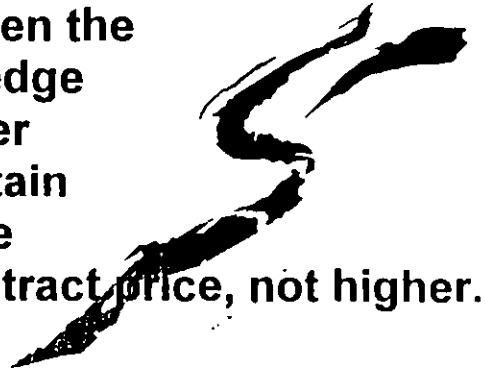
Seller Can Form a Contract by its Actions

In the following two examples, there is no actual "Battle of the Forms", as the seller forms a contract by its actions, (i.e. beginning with work, shipment or delivery).

Example: If the buyer sends its purchase order to the seller, and there is no acknowledgment by the seller of the purchase order on the buyer's acknowledgment form (or any other form), but the seller makes delivery, then there is a contract at that point, and on the buyer's terms. If the seller later claims an increase in price, the seller's increase is not enforceable.

Example: If the buyer sends its purchase order to the seller, and there is no acknowledgment by the seller, yet the buyer knows that there are long lead times involved and the seller begins work; at the point the seller begins work, a contract is formed; again on the buyer's terms. Later price increases by the seller are not enforceable. Even if the seller were to provide the price increases after the seller began work but before delivery, its claims for price increases would not be enforceable.

Once a contract is formed (see the two examples above), and then the seller sends a notice of a price increase above the contract amount, then the buyer is not obligated to agree to the price increase or acknowledge receipt of the price increase. If the seller sends a registered letter indicating the price increase, the buyer must sign in order to obtain the registered letter, but receipt of the letter is not an acceptance of the price increase. The buyer is obligated to pay only the contract price, not higher.



C. Highlights of the UCC

The UCC Protects YOU - the BUYER

Now we enter into the situation where both the buyer and seller have terms (i.e. the buyer on its purchase order and the seller on its acknowledgment form.

Example: A purchase order is placed by the buyer and acknowledged by the seller on its form (its terms and conditions), with the seller disclaiming liabilities specifically set forth in the buyer's purchase order. The product is received by the buyer and paid for by the buyer. Later, the product, due to a defect, causes extensive damage.

The purchase order was an offer, which was acknowledged by the seller with the seller's different terms and conditions, and in a timely manner. Unless the seller specifically disclaims responsibility for the liabilities proposed in the purchase order and expressly limits the sellers acceptance to its terms and conditions, then a contract is made under the purchase order on the purchase order terms and conditions. In our example, the seller did not limit its acceptance to its terms and conditions, and only came back with additional terms and conditions. The seller did not say it would not accept the purchase order unless the buyer specifically agreed to the seller's terms and conditions.

C. Highlights of the UCC

Material Alterations

Additional terms and conditions are simply a proposal and become part of the contract unless the additional terms and conditions materially alter the contract.

What are material alterations to the contract?

Answer: (1) A disclaimer of warranties
(2) A limitation on damages
(3) A requirement of arbitration
(4) A price change

These material alterations do not become a part of the contract unless specifically pointed out and the seller's offer is expressly limited to acceptance of the terms of the seller's offer. In effect the seller has made a counter offer to the buyer's offer on the purchase order. If the seller were to ship and the buyer were to accept, then a contract would be made on the seller's terms, including the seller's material alterations to the purchase order.

C. Highlights of the UCC

Material Alterations

The language calling for the buyer's attention to an alteration of the terms and conditions by the seller on its acknowledgment form ("Your offer is expressly limited to the acceptance of my terms and conditions contained on this acknowledgment copy.") must be conspicuous and clearly pointed out on the front of the seller's acknowledgment copy. The seller must specifically call the buyer's attention to its additional terms and conditions, simply hiding them on the back side of a printed form will not do this, even if the printed form makes a casual reference to the terms and conditions contained on the reverse side. That is why you will find a seller's notice of conditional acceptance either stamped clearly on the front of the purchase order in bold, contrasting print or in the form of a personal letter as described in the next paragraph.

The seller's counter offer can be "hidden" (legally) in the form of a very personal-sounding letter that simply says somewhere in the letter that the seller's acceptance of the purchase is accepted subject only to the terms and conditions of its quote (to the complete exclusion of your terms). Care must be taken not to allow the seller's counter offer to become the basis for the contract.

Thus, you must check each acknowledgment copy and not just file it.
You have ten (10) days to respond.

C. Highlights of the UCC

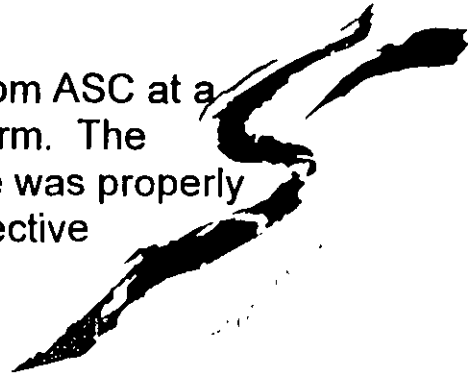
Price Quotations

Price quotations, advertisements, "asking prices", and the like are normally not offers; they are mere preliminary negotiations soliciting offers but they are not, in themselves offers. However, just because something is called a "price quotation" or "quote" does not mean that it can never be an offer. It is an offer if it contains language in which the vendor is promising (undertaking or committing itself) to deliver goods in the future. If the terms of the quote are complete, if it clearly indicates the vendor will definitely ship these goods and it appears that the only action required of the buyer is the issuance of the purchase order to close the deal, there is a contract between the parties with the "quotation" operating as the offer and the purchase order manifesting the acceptance of the offer, thereby forming a contract.

Time When Acceptance Takes Effect

General Rule: In offers by mail or other reasonable media, the acceptance is effective upon mailing, even though the offeror (buyer) never receives the acceptance. This is known as the "mailbox" or "dispatch" rule of contract law. It is based upon the risk of transmission. When an offer (purchase order) is received by an offeree(vendor), the vendor chooses to accept the offer and immediately mails its acceptance. The acceptance letter is lost in the mail. There is a contract since the risk of transmission is borne by the offeror.

Example: Fluor Daniel mails its purchase order form ordering certain steel from ASC at a certain price. ASC receives the order and immediately mails its acceptance form. The acceptance form is lost in the mail through no fault of ASC (i.e. the acceptance was properly addressed to Fluor Daniel; if it was not properly addressed, it would not be effective upon posting). The acceptance by ASC is effective upon posting. There is a contract though Fluor Daniel was not aware of the acceptance.



C. Highlights of the UCC

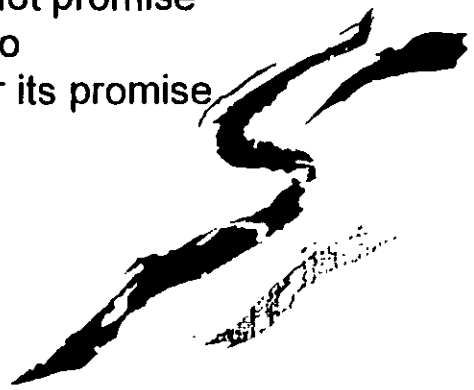
Silence as Acceptance

In general, silence cannot constitute acceptance of an offer. However, a prior course of dealing between a buyer and a seller may provide a sufficient basis on the part of the seller to ship goods without an order being received from the buyer. Moreover, even without a prior course of dealing between the parties, if a buyer accepts goods which have not been ordered, the buyer must pay for such unordered goods.

Making the Promise Enforceable - Consideration

The law requires some validating device to separate enforceable from unenforceable promises. The principal device used is called consideration. Consideration is basically the value received in exchange for a promise which makes the promise enforceable. A promise to make a gift (a gratuitous promise) is not an enforceable promise at law. The party making the promise (the promisor) is neither asking nor receiving anything for its promise. In order to make a promise enforceable using the most widely known validation device (consideration), the promisor must be asking for something in exchange for its promise and that which the promisor is asking for must constitute legal value (some detriment) to the party to whom the promise is made. That party is called the promisee and the promisee must be giving up some legal right (suffering some legal detriment) in exchange for the promise. If these two elements of exchange and detriment are present, there is consideration for the promise and the promise is enforceable at law.

EXAMPLE: ASC promises to ship steel to Fluor Daniel but Fluor Daniel does not promise to pay for the steel. here, ASC's promise is not enforceable because there is no consideration to support it. It is receiving nothing of legal value in exchange for its promise.



C. Highlights of the UCC

Promises Enforceable Without Consideration

Though consideration is the normal device validating a promise (i.e., making it enforceable), certain promises are enforceable in our law even though there is no consideration to support them.

The most common method of enforcing a promise without consideration is through the use of something called "promissory estoppel" or more precisely, "detrimental reliance". We said above that a promise which does not exact any legal value in exchange is a gratuitous promise with some reliance of a substantial nature on the part of the party to whom the promise was made (the promisee), this combination of promise plus detrimental reliance will make the promise binding.

EXAMPLE: Norris is the purchasing agent for Fluor Daniel and is in desperate need of trucks to be used to transport certain goods from one Fluor Daniel project to another. There are certain ABC trucks which have just completed their unloading operation at another Fluor Daniel project. Norris telephones an agent for ABC informing the agent of Fluor Daniel's needs. Norris indicates he has been attempting to get available trucks for several hours and has not been successful though he intends to keep trying. The agent for ABC tells Norris that Fluor Daniel may use the ABC trucks for this particular purpose without any compensation. Norris thanks the ABC agent, instructs the warehousing department as to the use of the ABC trucks and does not attempt to get trucks elsewhere. When the Fluor Daniel personnel attempt to use the ABC trucks, they are informed that the trucks are not to be made available since the order of the ABC agent has been countermanded. It is subsequently discovered that Norris could have procured other trucks had he continued his attempt rather than relying upon the promise of ABC through its agent. As a result of not being able to use the ABC trucks, Fluor Daniel encounters a substantial loss. Under these circumstances, the overwhelming majority of American courts would allow a recovery for the reliance losses incurred by Fluor Daniel since there was a promise by ABC which Fluor Daniel reasonably relied upon to its substantial economic detriment. Though this promise was gratuitous (ABC expected nothing in return), it was enforceable because of the detrimental reliance of Fluor Daniel and Fluor Daniel is thereby entitled to recover the amount of its losses from ABC.

C. Highlights of the UCC

Statute of Frauds

Ever since the seventeenth century, certain types of contracts are required to be evidenced by writing to be enforceable. These contracts include contracts for the sale of land, marriage contracts, contracts which are not going to be performed within one year from their making, contracts to answer for the debt of another (suretyship agreements) and, contracts for the sale of goods of $500 or more. The law creating this requirement is known as the statute of frauds because it was intended to prevent fraudulent allegations of promises which, in fact, had never been made. The Procurement representative is usually concerned only with the requirement that contracts for the sale of goods of $500 or more be evidenced by writing. This statute of frauds provision is now contained in the Uniform Commercial Code, No. 2-201. The Code section requires that all contracts for the sale of goods of $500 or more be evidenced by writing. "Goods" may be generally defined as all tangible moveable property (e.g., steel, automobiles, trucks, false teeth, tomatoes, building materials, office supplies, equipment, inventory, --you name it-- if it is tangible stuff that is moveable, it is "goods" under the UCC.

Service Contracts

Contracts involving the performance of services (e.g., repair, maintenance or any other kind of services) are not contracts for the sale of goods. Therefore, the Uniform Commercial Code does not apply to such contracts. They are controlled by basic contract law which may, in a given state, import some UCC concepts by analogy (through the courts of that state). However, there is a very significant problem where the subject matter of the contract is mixed, i.e., the contract involves both goods and services. The courts of various states have faced considerable difficulty in these hybrid situations.

C. Highlights of the UCC

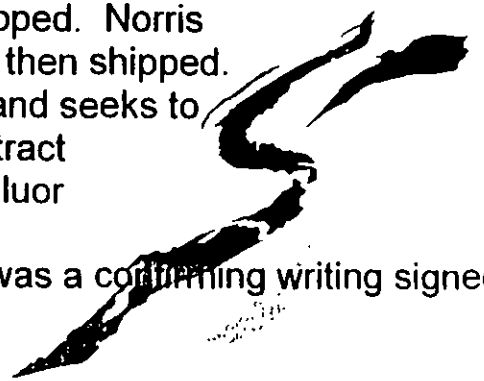
General Rule - Mixed Sale of Goods and Services

There is a groundswell of judicial authority for the proposition that the court will look at the dominant feature of the contract to determine whether it is a contract for the sale of goods (to which the UCC applies) or a contract for service (to which the UCC does not apply). thus, if the materials constitute 85% of the contract price and the installation (labor) is the remainder, the dominant understanding is that the buyer is purchasing goods, not services, and the UCC applies.

Confirmation Signed by the Seller

The writing required as evidence of a contract for the sale of goods of $500 or more need not be a very extensive writing--the only terms it must contain are the quantity terms and the identification of the parties to the contract. The price, time of delivery and other terms may be omitted from the writing and, yet the writing will satisfy the requirements of this provision of the Code. One of the most significant changes wrought by the Code is that the writing need not be signed by the party to be charged. The Code makes a significant change in the law by a provision which indicates that a contract between merchants, (Fluor Daniel and Supplier), evidenced by a written confirmation which confirmation has not been objected to by the buyer (Fluor Daniel) within ten days after its receipt, will, for the purposes of the statute of frauds, satisfy the writing requirement and bind the buyer to a contract, assuming the other elements of a contract are present.

EXAMPLE: Norris, the purchasing agent for Fluor Daniel, orders certain quantities of steel at a certain price from ASC. Norris places this order by telephone and fails to confirm it with a purchase order. However, ASC submits its acknowledgment form indication that the goods will be shipped. Norris does not object to this confirmation within ten days after its receipt and the goods are then shipped. When the goods are delivered to Fluor Daniel, Fluor Daniel does not need the steel and seeks to return it to ASC. ASC contends there is a contract even though no writing of this contract (which contains a price of $17,000) has ever been issued or signed by any agent of Fluor Daniel. The contract is enforceable because all of the elements of a contract are present and Fluor Daniel may not use the statute of frauds as a defense since there was a confirming writing signed by ASC to which Fluor Daniel did not object within 10 days after its receipt.



C. Highlights of the UCC

Contract of Adhesion

Those which are standard throughout an industry and which cannot be altered or modified by any party seeking to make a purchase of the product.

A contract for purchasing an automobile is a contract of adhesion since all automobile manufacturers maintain similar or identical distasteful disclaimers. If you want the automobile, you must sign the form or you will not be able to get the automobile.

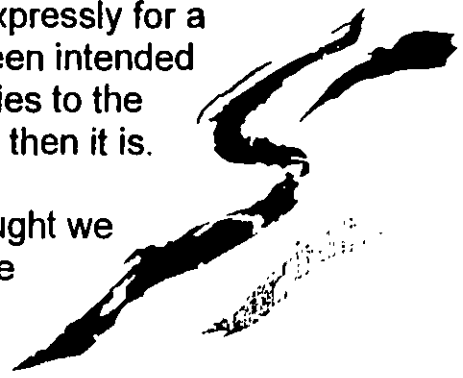
Confirming Purchase Orders

If a purchase order is placed by phone, it is recommended you insert the following as the front sheet of the purchase order:

"This confirms the telephone conversation between _____(name) and _____(date) entering into a purchase order for _____."

Merger Clause - "All Agreements are in the Contract"

Many contracts have in them what is called a "Merger Clause". This is simply a clause that states that all prior representations by the vendor are merged into this writing and if they exist at all after the purchase order is signed, then they must be stated in the purchase order. Section 2-202 of the Code provides expressly for a merger clause in subparagraph (b) thereof where the court finds the "writing to have been intended also as a complete and exclusive statement of the terms of the agreement". If the parties to the purchase order say that the writing is a full and complete expression of the agreement, then it is.



Obviously, it is not in our best interest to rely on a court's interpretation of what we thought we meant. Clearly express your full understanding of all agreements. Section 2-316 of the Code, indicates a party cannot disclaim that which it has put in writing in another part of the agreement. (The expressed warranty of description.)

C. Highlights of the UCC

Mutuality of Obligation

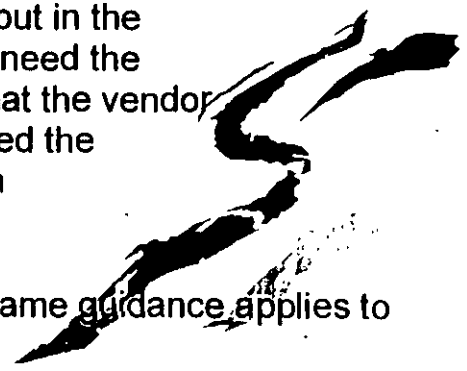
It is the general contract principle of law that in order to have a contract which is enforceable against both parties to the contract, there must be "mutuality of obligation". That is to say, that both parties must have some obligation to perform the contract for it to be enforceable.

The clause "Buyer in his sole discretion has the right to cancel this contract at any time", is of such a nature that there is no mutuality of obligation, and therefore, there is not a contract. The buyer, under this clause is not bound to perform under the contract, therefore, neither is the seller. Both parties must be bound in order to enforce the contract. Therefore, there must be a reasonableness to the termination clause. If the termination clause is limited by giving reasonable notice and paying reasonable cost on termination, then the clause is acceptable and both are bound. (See the Fluor Daniel subcontract and purchase order terms and conditions for a reasonable "middle of the road" termination clause.)

"Seller's Blackmail"

What if you are forced to pay the vendor's price regardless of your contractual rights under the Uniform Commercial Code in order to avoid litigation delays and obtain a timely delivery? (You have experienced a vendor price change notice after the contract has been established, but you need the goods and the change is not legally enforceable.)

You should pay the vendor's invoice by acknowledging that you are "paying under protest". That statement will reserve your right to contest the unlawful increase for four years. If the vendor objects to the "protest" and you are forced to withdraw your claim of "payment under protest", then put in the letter to the vendor when you withdraw the protest: "I withdraw my protest because I need the material urgently on _____(date)." This will preserve your right to claim that the vendor had you in a position where he was the sole source of materials at the time you needed the materials and no one else could reasonable supply the materials. Therefore, you can clearly demonstrate that you were forced to withdraw your protest and you did not withdraw the same voluntarily. This again would preserve your rights to claim the excess at a later date when perhaps delivery and material schedules improve. The same guidance applies to disputes on other disputed terms and conditions of purchase.



C. Highlights of the UCC

Disputed Payments

If you have a dispute with a vendor and you provide it with a check which says "In full satisfaction" and the vendor cashes the check, then you have successfully concluded the vendor's claim. However, in some states, the vendor can cash the check and preserve his claim by writing on the check "under protest". More and more jurisdictions are holding that the party disputing the check must return it if it is marked "In full satisfaction" and the receiving party disputes that fact.

Impossibility of Performance - "Force Majeure"

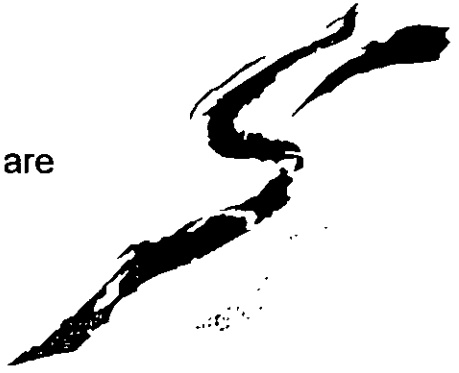
- When a party announces it cannot perform in accordance with its agreement, then there is a Breach of Contract.

- A breach may be excused if a vendor cannot perform because of some irresistible force such as an act of God.
  Examples are:
  Earthquake
  Hurricane
  Flood

- If the excuse is not an act of God occurrence, then Section 4 to 2-615 of the Code States:
  "Increased cost alone does not excuse performance unless the rise in cost is due to some unforeseen contingency which alters the essential nature of the performance."

The key element is unforeseeability.

Each time a buyer and a seller enter into a contract, this contract carries some risk for both parties. The parties to the contract are charged with analyzing these risks, which are foreseeable, and will not be excused in the event that one of these events occurs. Examples would be normal fluctuations in the market, a strike, or a government price freeze where an escalation clause is included in the contract.



C. Highlights of the UCC

Buyer / Seller Remedies in the Event of Breach

Breach:

- Webster: Violation of a law, obligation, tie or standard
- Fluor Daniel: Supplier has violated its agreement to provide requirements specified in purchase order or contract

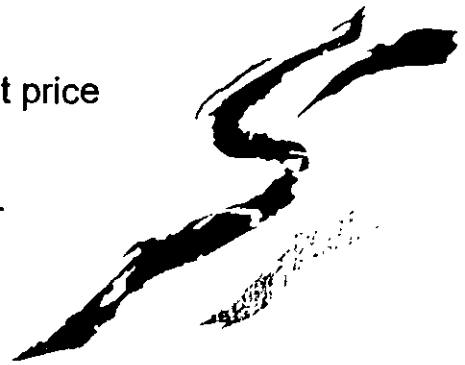
Does a breach only occur when a supplier violates its obligation? No. Fluor Daniel can also cause a breach.

When is Buyer (Fluor Daniel) in Breach? When Fluor Daniel caused the supplier to be placed in a breach situation (EX: Fluor Daniel not supplying material to a module fabricator) or unjustly accusing the supplier of breach and pursues remedies only later to find that Fluor Daniel was the cause.

NOTE: The Law Department should be advised prior to any breach proceedings

Without going to court what are the UCC agreed resolutions / remedies when there is a breach?

- Buyer (Fluor Daniel) Remedies when Seller is Breach
  - Cancel
  - Cover-supplier pay the difference in price if material repurchased
  - Recover damages based upon the difference between contract / market price (Only at the time the buyer learned of the breach)
  - Pay for and recover goods in seller position
  - Buyer's remedy of "Specific Performance" - obtain court order for Seller to deliver goods



C. Highlights of the UCC

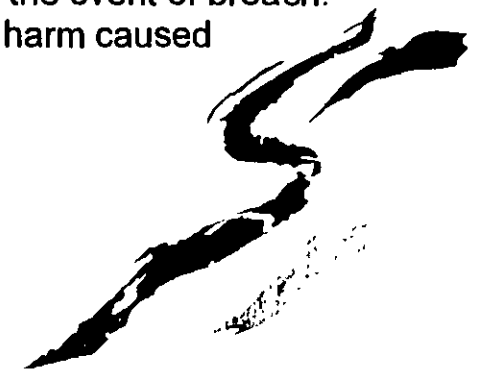
Buyer / Seller Remedies in the Event of Breach (CONTINUED)

- Seller Remedies when Buyer (Fluor Daniel) is Breach
  - Withhold delivery of goods
  - Resell goods associated with contract
  - Stop delivery by its carrier
  - Resell and recover damages as well as incidental damages
  - Recover damages based upon the difference between contract / market price
  - Cancel

NOTE: The Law Department should be advised prior to any breach proceedings

Liquidated Damages

Liquidated damages are those damages which are agreed to and the amount is fixed in the body of the contract. This is done, as obtaining actual damages in the event of a breach of the contract would be a difficult matter of proof. In Section 2-718 of the Code, provisions are made to allow for reasonable liquidated damages. An unreasonably large amount of "liquidated damages" is in fact a penalty and void. Subsections (2) and (3) of Section 2-718 discuss the correct method of establishing liquidated damages in the event of breach. The amount established must be reasonable in light of the anticipated or actual harm caused by the breach.



C. Highlights of the UCC

Warranties

- Express Warranties
  - Statement of fact as to the quality of goods which becomes the "basis of the bargain".
- Implied Warranty of Merchantability
  - Automatic warranty
  - What you "expect" to get in terms of the quality of goods
  - You are entitled to goods of fair, average quality
  - Merchantable goods-decent quality without defects
- Implied Warranty Fitness for a Particular Purpose
  - When the seller has a reason to know that the buyer is relying on the supplier's judgment, skill and choice of suitable goods to satisfy a performance specification
  - Warranty extends to those goods because they are for a particular purpose

An example would be when a purchase order includes a performance specification for specialized equipment

D. Module Review Exercise

- ABC Fuel Company receives notice canceling the two month balance of a three month agreement to supply fuel oil to My Way or No Way Construction Company.
- My Way's buyer contends that they need no more fuel oil and the cancellation clause was added to the signed agreement based on prior discussions with ABC.
- ABC's sales representative contends that although the cancellation clause was discussed, it was never agreed upon.

Who will prevail?

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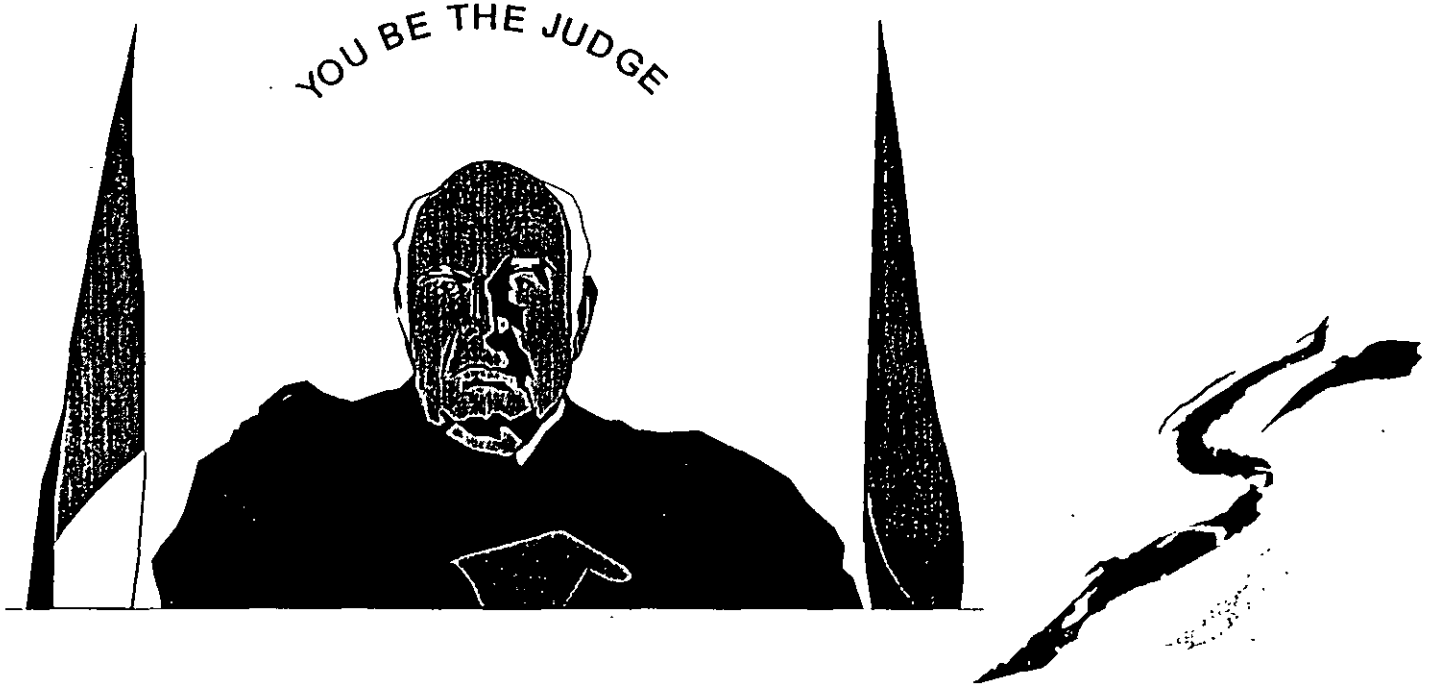
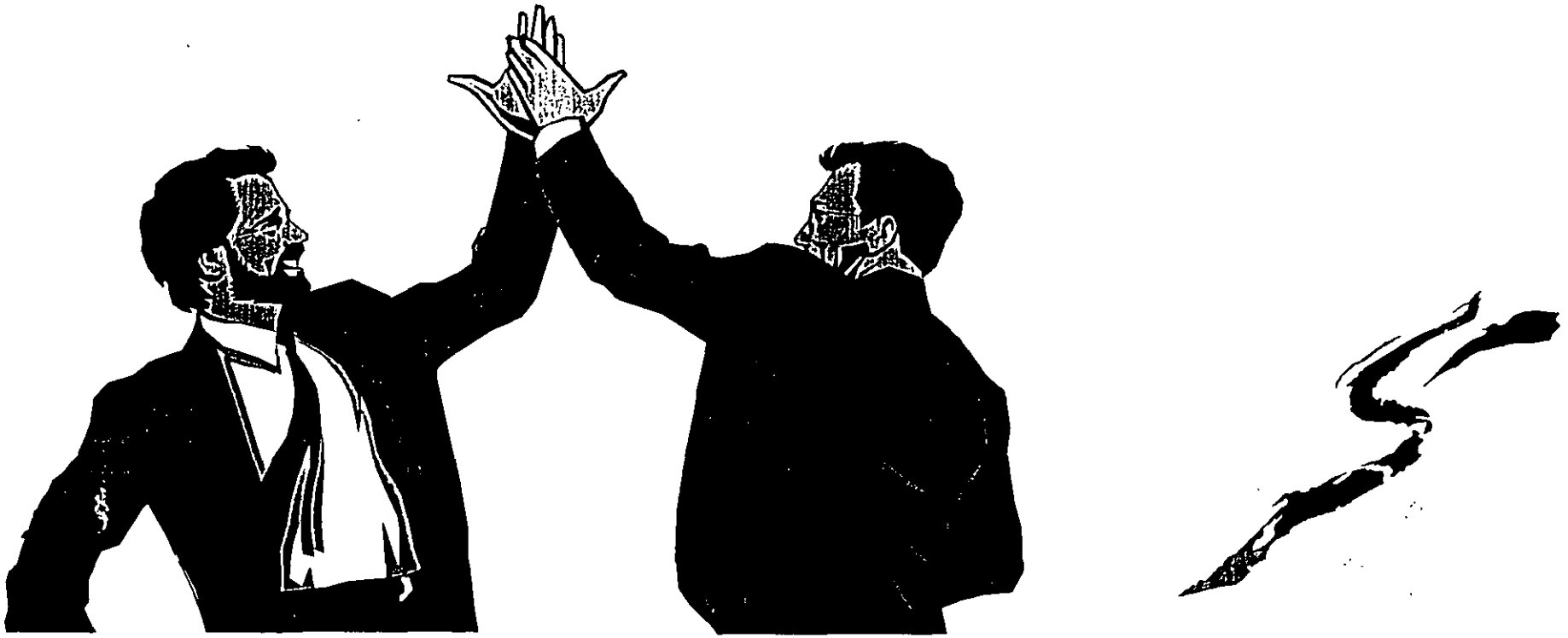


D. Module Review Exercise

Answers

Seller Prevails:
The clause was not a part of the signed agreement. The buyer added the clause to the signed contract without the seller's consent. The seller was entitled to lost profit damages.

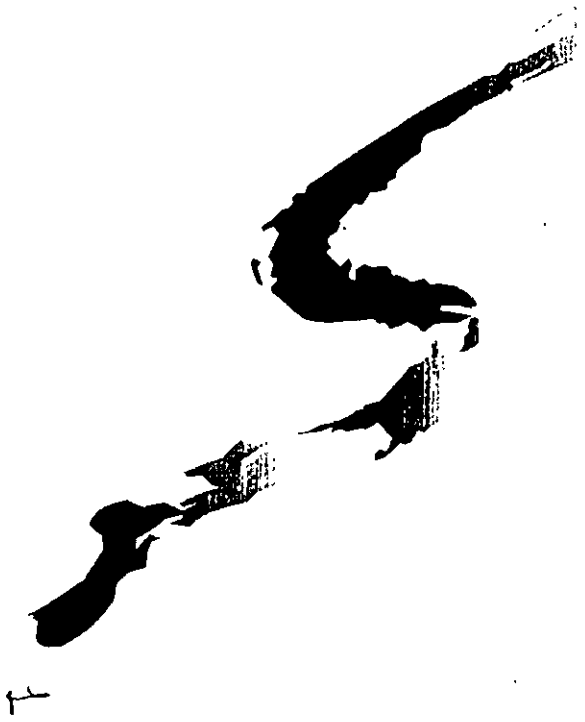


DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

Módulo III "Suministros"
Del 21 al 23 de mayo.

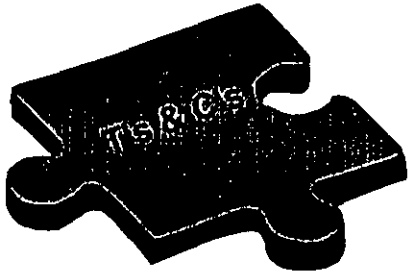
Terms and Conditions

Palacio de Minería
1998.



P101
MODULE FOUR

Terms and Conditions



MODULE 4
Terms and Conditions

Purpose: To provide a general overview of purchase order P6 Terms and Conditions.

A. Terms & Conditions Guidelines
B. Articles Index
C. Article Definitions and Interpretations
D. Module Review Exercise

A. Terms and Conditions Guidelines

- What is the best purchase scenario?
  - A Purchase Order issued without exceptions.
- What steps should we take when the bid arrives with the supplier's Terms & Conditions?
  - First of all, quickly determine if the bid is technically and commercially acceptable.
  - Advise the bidder its bid may be "REJECTED", this gets the attention of the bidder and focuses the bidder in identifying the real areas of concern in our T&C's..
- Exceptions
  - Are there Terms that are more important than others?
    (Possibly: read the prime contract)
  - What do you do with the exceptions to the lesser terms?
    (PPM confers with Procurement Department Head / Project Manager and determines how and what to negotiate)
  - Do all exceptions need authorization?
    (YES)
  - Who authorizes the negotiated exceptions?
    (PPM and Procurement Department Head <u>OR</u> the LAW)
  - What happens if the wrong person authorizes exceptions?
    (Fluor Daniel may be exposed to more risk)
  - Where and how do you document authorized exceptions?
    (In the Purchase Order)

B. Articles Index

C. Article Definitions & Interpretations

- **Article 1 Shipment**
  - Partial shipments do not divide Seller's obligations.
  - Buyer's count prevails if no packing list is included.
  - Overages may be returned for credit at Seller's expense.
- **Article 2 Complete Agreement**
  - Signing the P.O., acknowledging P.O. acceptance, or commencing performance results in Seller's acceptance of the P.O.
  - The P.O. and the accompanying documents are the entire agreement and have priority over:
    - ✓ Previous Documents *(Proposals, Negotiations, Addenda, Meeting Minutes, etc.)*
    - ✓ Invoices and Acknowledgments
    - ✓ Trade Custom and / or Trade Usage
  - Ambiguities, express conflicts and discrepancies shall be brought to the attention of Fluor Daniel by Supplier.
  - Heading and Numbering are not to be used for interpretation of any provision.
- **Article 3 Title**
  - Seller guarantees that it has sole title to the goods and that title is not subject to any claim by anyone else.
  - If Buyer makes progress payments, title passes once the goods are identified to that P.O.
  - Care, custody and control remains with the Seller until the Buyer takes possession or formally accepts in writing.
  - All shop drawings, patterns, tools or other items made preparatory to production are the Buyer's property.

    Consultants will always object because they believe the drawings are their marketing tools.

C. Article Definitions & Interpretations

Article 4 Reservation of Rights

- The Seller's obligations are still in force and the Buyer's rights of rejection still stand regardless of:
  - ✓ Whether or not inspection has occurred.
  - ✓ Whether payment has occurred.
  - ✓ Whether buyer has knowledge of a non-conformity, regardless of when discovery of a non-conformity occurs.

Article 5 Waiver

- Just because the Buyer does not insist on performance of any term or condition on a prior occasio does not waive such term, condition, instruction, right or privilege on any occasion thereafter.

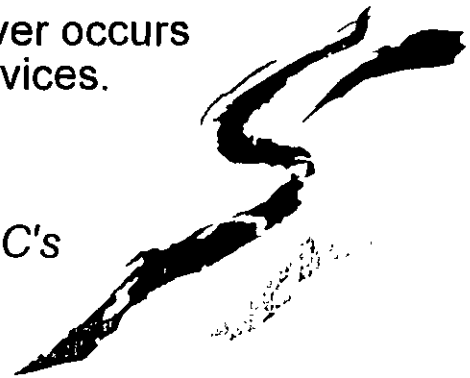
Article 6 Patents

- Seller bears all responsibilities for any patent infringement accusation or final judgment. (including payment of damages against Fluor Daniel and / or client)
- We must promptly advise Seller in writing of any suits.

Article 7 Warranty

- The goods will conform to applicable drawings, specifications and other descriptions.
- The goods will be new, first class, fit and sufficient for all the purposes intended and free from defects.
- The warranty extends to the Buyer, the Owners and their Customers.
- Within 12 months after start-up or 18 months after shipment, whichever occurs first, Seller will repair or replace any non-conforming goods or services.
- All costs of repair are the responsibility of Seller.

Review the Prime Contract to determine if different, and amend our T&C's



C. Article Definitions & Interpretations

- **Article 8 Inspection and Expediting**
  - Buyer and Owner reserve the right of inspection and expediting of the Seller and all sub-suppliers of the order.
  - Physical access to all relevant parts of the Seller and sub-supplier's plants is permitted.
  - The Seller must make these terms a requirement for their suppliers.
  - Five (5) calendar days notice in advance of inspection by Buyer required.
  - No goods may be shipped without a final inspection or a written waiver of inspection by the Buyer.
  - At a minimum, order status is to be furnished every 14 days.

  Review the Prime Contract for the inspection notice period and order status notice.
- **Article 9 Indemnity**
  - Seller agrees to indemnify and protect the Buyer and Owner from all injury to persons and damage to property in any way connected with the performance of this P.O. even if injury or damage is caused in part by the Buyer or Owner.
  - However, the Seller is not responsible for any injury or damage caused solely by the negligence of the Buyer or Owner.
  - In providing all indemnity in P.O. Seller agrees it has been paid a specific payment of $10.

Note: To indemnify means one party assumes an obligation to make the other party whole with respect to the claims of others.

Must review the Prime Contract to ensure wording in this article meets requirements of the prime.

C. Article Definitions & Interpretations

Article 10 Delays

- Time of delivery is of the essence for the P.O.
- Seller shall promptly notify Buyer of any actual or anticipated delay and take reasonable steps to avoid such delays.
- If the delay is caused by acts of God, acts of civil or military authority, war, riots, strikes or similar causes beyond the Seller's reasonable control, then:
  - ✓ The Buyer can terminate the agreement or
  - ✓ The Buyer can extend the date for performance
- Seller is not entitled to any extra compensation in the event of such a delay.

Must review the Prime Contract to ensure wording in this article meets requirements of the Prime.

Article 11 Assignment

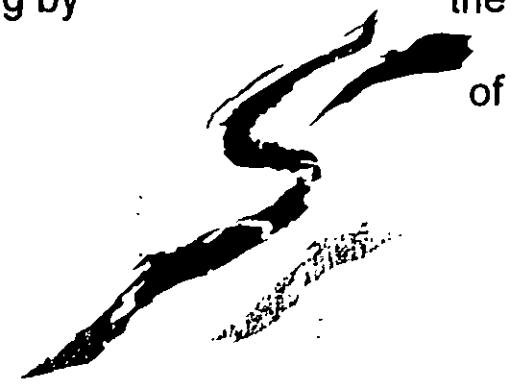
- Buyer's prior approval is necessary for any assignment of this P.O.
- The Buyer has the right to assign this P.O. to the Owner or an affiliate of the Buyer.

Article 12 Changes

- The Buyer has the right to make changes to the specifications and drawings of the P.O.
- Seller must notify the Buyer of any price or schedule impact within 5 calendar days after Seller's receipt of the notice of change.

Check the Prime Contract for notification period.

- Seller shall suspend performance of the change unless released in writing by the Buyer.
- While Buyer and Seller are negotiating cost adjustment, unaffected parts of the P.O. should proceed.
- For modifications to be binding upon the Buyer, the agreement or understanding must be in writing.



C. Article Definitions & Interpretations

Article 13 Cancellation for Default

- Buyer may cancel the P.O. if the seller is judged bankrupt, makes a general assignment for creditors, is insolvent and has a receiver appointed or is in default of any provision or requirement of the P.O.
- The Buyer may find another means of completing the P.O. and the original Seller is responsible for any additional costs.
- The Buyer may use money owed the original Seller to satisfy the additional costs.
- The waiver by the Buyer of any default of Seller does not waive any other requirements or any future default of the Seller.

Article 14 Termination for Convenience

- Buyer may terminate the order for convenience by written notice at any time.
- On the date of termination, all work is to be discontinued and all work-in-progress protected.
- Termination payment shall cover that portion of work performed to date of cancellation (including overheads and profit) and reasonable expenses resulting from the termination.
- Seller is not entitled to protective profits, overhead, consequential or other termination.
- All goods must be delivered (with all applicable warranties), assigned or disposed of as directed by Buyer prior to final payment.

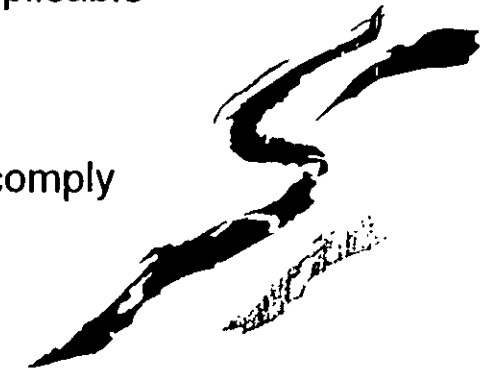
In any termination analyze your risk and options as part of a team prior to the termination.

Article 15 Laws and Regulations

- Seller warrants that all goods and services supplied will comply with applicable laws and regulations.
- The P.O. will be subject to California Law and Jurisdiction.

Prime Contract will determine any changes to this contract.

- Seller will be responsible for any costs arising out of Seller's failure to comply with OSHA and Affirmative Action Plans as they relate to the goods.



C. Article Definitions & Interpretations

Article 16 Mechanics' Liens

- Seller will indemnify and defend Buyer and Owner from all liens relating to this P.O. and will keep the premises free of liens.
- To the extent allowed by law, all lien rights relating to the goods furnished for this P.O. are waived.

Article 17 Suspension of Performance

- Buyer may at any time suspend all or part of this order for up to 180 consecutive calendar days or 270 total aggregate days.
- Seller shall promptly and efficiently suspend P.O. performance and properly care for affected goods.
- Buyer may at any time withdraw the suspension through written notice to the Seller.
- Seller may pursue justifiable cost adjustments through the Changes provisions, but incidental and consequential damages are not allowed.

Review the Prime Contract for suspension time periods and what Seller is allowed to recover.

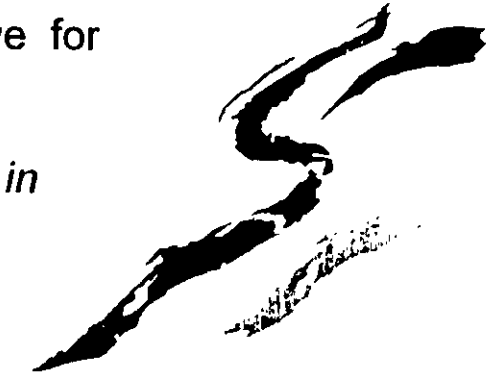
Article 18 Independent Contractor

- Seller is acting as an independent contractor and not as agent or employee of the Buyer.
- Written authorization by the Buyer is required before any other work can be sub-contracted to others.

Article 19 Gratuities

- Buyer may terminate this P.O. if it is found that gratuities were offered or given to influence Buyer's award or administration of the P.O. (entertainment, gifts or otherwise).
- If terminated, Buyer may pursue the same remedies as Buyer may have for breach of the P.O.

Procurement personnel should be aware of our Ethics Policy included in the Procurement Practices.



C. Article Definitions & Interpretations

Article 20 Confidential Information

- Seller and sub-suppliers will not disclose any document designated as confidential to any third party or use it for any purpose other than performance of the P.O.
- Seller shall not publicize the existence or scope of the P.O. without Buyer's consent.

Article 21 Hazardous Materials

- Seller must advise Buyer if any goods are furnished which are subject to hazardous / toxic rules and regulations.
- Appropriate shipping and handling instructions for such hazardous / toxic materials must be provided to Buyer.
- A specified certification must appear on the Bill of Lading for any hazardous materials.

Article 22 Validity of Provisions

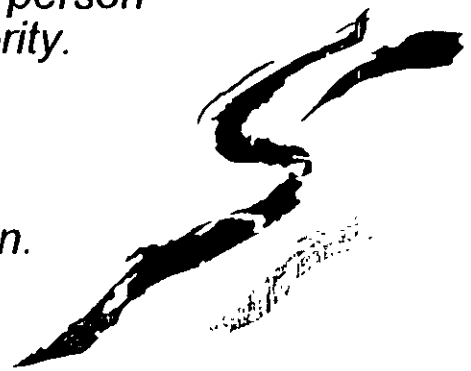
- The provisions in the whole Purchase Order are not invalid because one provision or part is unenforceable.

Article 23 Arbitration

- If Buyer is required to arbitrate a dispute with a third party, Seller agrees to join in the arbitration and to be bound by the resulting judgment.

Note: The hearing and determination of a case in controversy by a person chosen by the parties or appointed under statutory authority.

This article commits the Seller to support Fluor Daniel in any arbitration Fluor Daniel may be involved in. It does not mean that Seller and Fluor Daniel will resolve their disputes through arbitration.



C. Article Definitions & Interpretation

Article 24 Right to Offset

- Any amounts which the Seller owes the Buyer under this P.O. may be deducted to pay any other debt Seller owes Buyer or Owner.

Article 25 Security

- If the Buyer makes any advance payment or progress payment, the Seller may be required to execute a Security Agreement and Financing Statement. This gives the Buyer a priority to the goods over any of Seller's other creditors.

Article 26 Insurance

- Certificate of Insurance required 30 days prior to commencing work.
  - ✓ Workman's compensation - $100,000 / occurrence - minimum
  - ✓ Comprehensive General Liability - $1,000,000 / occurrence, includes bodily injury, property damage, including death
  - ✓ Automobile - $1,000,000 / occurrence

This article is applicable when services are performed at site.
Review the Prime Contract for insurance changes.

Article 27 Safety and Health Regulations

- Seller abides by and enforces our project safety requirements.
- Work area to be kept clean.
- Fluor Daniel or Owner has right to remove person(s) violating safety rules & regulations.

This article is applicable when services are performed at site.

D. Module Review Exercise

Module 6 will go into further detail about bid receipt, negotiations and award. Additional modules, later in the course, are all capable of having a Terms & Conditions issue arise.

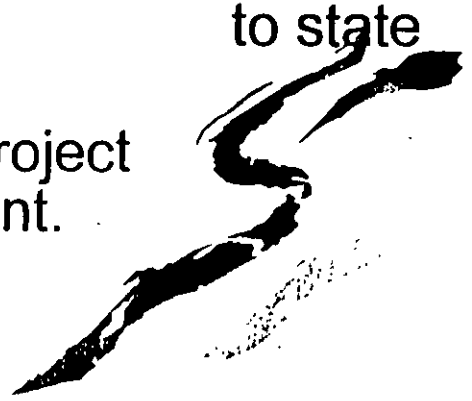
For this exercise, let's say the prime contract requires a longer warranty period than that of our company standard stated in article number 7.

1. How do we emphasize this to suppliers?
2. What if there is a related cost?
3. What if the Seller will not agree to a Fluor Daniel term which is also in the Prime Contract?
4. What if the supplier can honor required warranty on 5 pumps but not the other 5 pumps?

D. Module Review Exercise

Answers

1. Special clauses within the Sample Purchase Order and Purchase Order should address the following:
   - ✓ Sample P.O. - state warranty required and that this supersedes article 7 of Terms and Conditions.
   - ✓ P.O. - state agreed warranty period achieved including expiration date.
2. Exhaust all efforts to negotiate additional charge for extended warranty. However, if unsuccessful, itemize cost in order so not to confuse total material cost.
3. If the prime contract extended warranty cannot be achieved then the Project Director and Client must agree to any less stringent warranty requirement. The P.O. should then be amended to state agreed warranty.
4. Again, negotiate the best warranty possible, obtain Project Director and Client approval, and document agreement.



DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

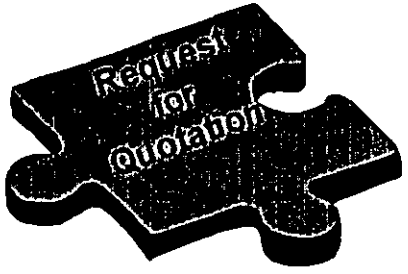
Módulo III "Suministros"
Del 21 al 23 de mayo.

Request for Quotation

Palacio de Minería
1998.

P101
MODULE FIVE

Request for Quotation



MODULE 5
Request for Quotation

Purpose: To provide guidance in the preparation, issuance and execution of a Request For Quotation.

A. Request for Quotation
B. Preparing the Bid Document
C. Bid Receipt Preparation
D. Module Review Exercise

A. Request for Quotation

What is it?

A Request For Quotation is a formal approach to obtaining a price from selected bidders for a particular commodity that will be purchased.

Why do we do it?

To obtain materials ethically and consistently for a fair price and to ensure all bidders receive the same information pertaining to the bid package.

Who creates a Requisition?

During the design and construction phases, engineers create the requisitions.

How does a Requisition get to Procurement?

It must have a routing sheet complete with project approval signatures.

What does Procurement do with a Requisition?

Prepare for bid by selecting and contacting the bidders. Confirm bid close date and address. Decide how to bid the package (i.e. telephone or formal). Assemble the commercial verbiage (i.e. Sample P.O.). Issue to bidders.

Why do we have a Sample P.O. and a P.O. document?

A Sample P.O. is generated during the bidding cycle and sent with the RFQ so bidders can see Purchase Order commercial criteria. At time of award the Sample P.O. is transferred into the P.O. with little effort.

What is a Pre-Bid Meeting?

One meeting with all bidders held shortly after bid issue to focus on scope and requirements as well as to discuss any and all clarifications the bidders may have.

B. Preparing the Bid Document

- ✓ Request For Quotation: a document that introduces the package to the bidders and instructs them how to qualify for further consideration.
  - ★ RFQ Clauses and Bid Requirements
- ✓ Sample Purchase Order: a document that contains all commercial topics which govern during execution of the purchase order.
  - ★ Purchase Order Clauses and Execution Requirements
- ✓ Bill of Material: a document that lists scope of supply which bidders post pricing on and return for consideration.
  - ★ Quantity / Description / Catalog Number
- ✓ Technical Attachments
  - ★ Vendor Data Requirements / Specifications / Surveillance Check List / Engineering Data Sheets / Drawings
- ✓ Commercial Attachments
  - ★ P6 Form - Terms & Conditions
  - ★ P10 Form - Hazardous & Toxic Substances
  - ★ P11 Form - Seller's Representation & Certifications

B. Preparing the Bid Document

Master Purchase Order Clauses

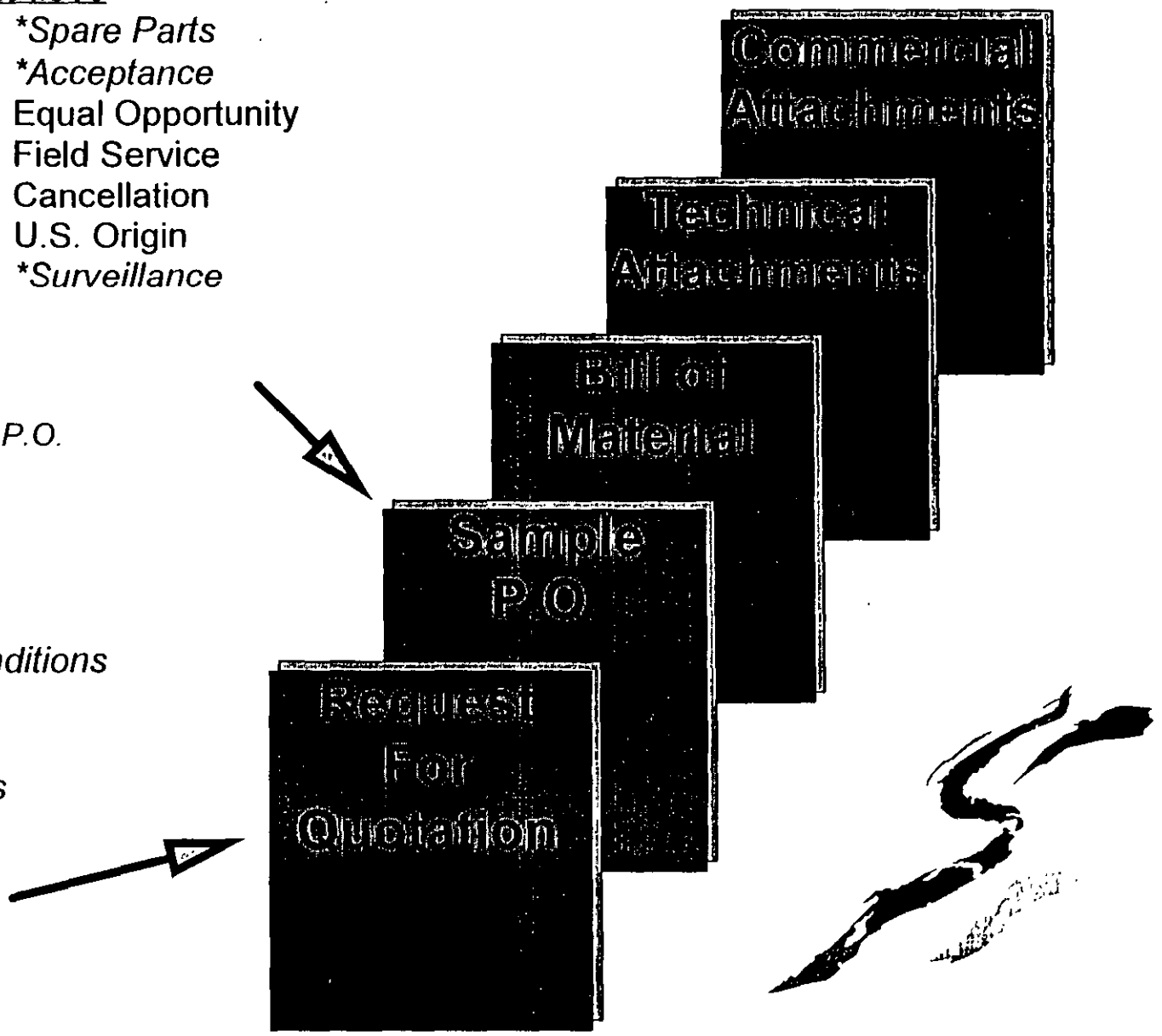
**Governing T&C's*
**Definitions*
**Communications*
**Technical Attachments*
**Commercial Notes*
**Invoice Information*
**Shipping Instructions*
**Schedule*
**Spare Parts*
**Acceptance*
Equal Opportunity
Field Service
Cancellation
U.S. Origin
**Surveillance*

** Denotes usage in Sample P.O. #GMS-A-001*

Master RFQ Clauses

**Governing Terms and Conditions*
**Statement of Compliance*
**Communications*
**Commercial Requirements*
**Alternate Quotations*
Reservation of Right

** Denotes usage in RFQ #GMS-A-001*



B. Preparing the Bid Document

Sample Purchase Order Clauses

- Governing Terms and Conditions
- Definitions
  - → Owner
  - → Buyer
  - → Seller
- Communications
  - → Commercial
  - → Technical
  - → TDC
  - → Invoice
- Technical Attachments
  - → Specifications
  - → Data Sheets
  - → Drawings
- Commercial Notes
  - → Pricing
- Invoice Information
  - → Number of Invoice Copies Required
  - → Terms of Payment
  - → Order Completion Retention Provision
  - → Freight Terms
  - → Taxes
- Shipping Instructions
  - → To
  - → Via
  - → Weight and Dimensions
  - → Packing and Marking
- Schedule
- Spare Parts
  - → Quotation For 1 yr. Operations
- Acceptance
  - → Sign and Return
- Equal Opportunity
  - → Statement
- Field Service
  - → Mfg. Service, Start-up Assist.
- Cancellation
  - → Finalize Prior to Award
- U.S. Origin
  - → Mfg. in USA
- Surveillance
  - → Level and Plan

Request For Quotation Clauses

- Governing Terms and Conditions
- Statement of Compliance
  - → Bid Exactly per Specification
  - → Bid per Spec. with Exceptions
- Communications
  - → Procurement
- Commercial Requirements
  - → Bid Close Date
  - → Number of Bids
- Commercial Requirements (Continued)
  - → Instructions
  - → Are Bids Sealed?
- Alternate Quotation
  - → Base Bid Required Per Specification with Alternate Bid
- Reservation of Right
  - → Reserve the Right to Split and Combine

C. Prepare for Bid Receipt

► Expedite Bids

- First contact with suppliers shortly after RFQ issuance.
  - ✓ Confirm receipt of bid.
  - ✓ Confirm bid close date.
  - ✓ Facilitate clarifications.
- Second contact with suppliers up to one week prior to bid due date.
  - ✓ Confirm bid close date.
  - ✓ Facilitate clarifications with engineering. Prefer clarifications to be written.

► Bid Extensions

- If steps listed above are taken prior to RFQ issuance, extensions should not be needed.
- As a norm, are Not granted.
- Are granted if all or a majority of the bidders request them.

NOTE: Refer to procurement practices and project procedure for specific project policy.

► RFQ Addendum

- A written method of advising bidders of a scope change that will affect the bidding process and final product.

D. Module Review Exercise

RFQ #GMS-A-001 for 10 chilled water pumps P-101 through P-110 has just been received in procurement. The procurement strategy for this package is to competitively bid to:

Chump's Pumps
Pump and Circumstance, Inc.
H.R. Pumps & Stuff

Answer the following questions:

1. Prior to formally receiving the RFQ in Procurement and issuing it to the bidders what constitutes a complete RFQ from engineering?

2. Why should you contact each bidder prior to package issuance?

3. When should you expedite bid receipt?

D. Module Review Exercise

Answers

1. A complete RFQ includes:
   - An engineering transmittal cover sheet complete with all approving signatures.
   - A list of the specifications and data sheets.
   - A bill of material listing P-101 through P-110.
   - Engineering attachments including specs / dwgs / vendor data requirements / inspection check list

2. Make contacts to bidders to:
   - Confirm they are interested in bidding this RFQ.
   - Confirm address and bid close date.
   - Address any special features about the package and / or project.

3. Expedite bids:
   - Within one week after RFQ issuance.
   - One week prior to bid due.

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Módulo III "Suministros"
Del 21 al 23 de mayo.

Bid Analysis and Purchase Order Award

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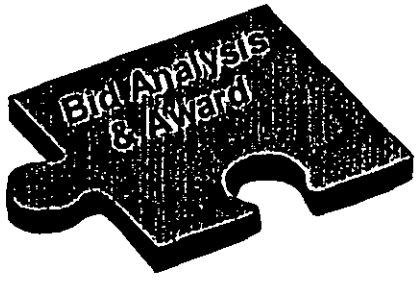
1998.

P101
MODULE SIX

Bid Analysis and Purchase Order Award



MODULE 6
Bid Analysis and P.O. Award

Purpose: To provide an overview of the bid analysis process with an emphasis on techniques to select the best source of supply.

A. Bid Summary
B. Bid Analysis / Evaluation
C. Recommendation Through Award
D. Module Review Exercise

A. Bid Summary

What is it?

- A document used to summarize technical and commercial information from bidder proposals.

What happens when the bids arrive?

- We perform an initial analysis to determine major errors or omissions and fax bidders for this information.
- Procurement then provides engineering with a copy of the bid and the posting of information begins:

Procurement

- ✓ Schedule
- ✓ Commercial Terms
- ✓ Supplier Performance
- ✓ Logistics
- ✓ Supplier Added Value
- ✓ Bid Clarifications
- ✓ Control Bid Analysis

Engineering

- ✓ Compliance with Specifications
- ✓ Reconcile Technical Deviations
- ✓ Technical Value Awareness
- ✓ Liaison Between Engineering Disciplines
- ✓ Technical Qualification
- ✓ Quantities
- ✓ Supplier Added Value
- ✓ Technical Bid Clarification
- ✓ Alternates

B. Bid Analysis / Evaluation

Listed below is a menu of key items which may be reviewed as part of a bid analysis.

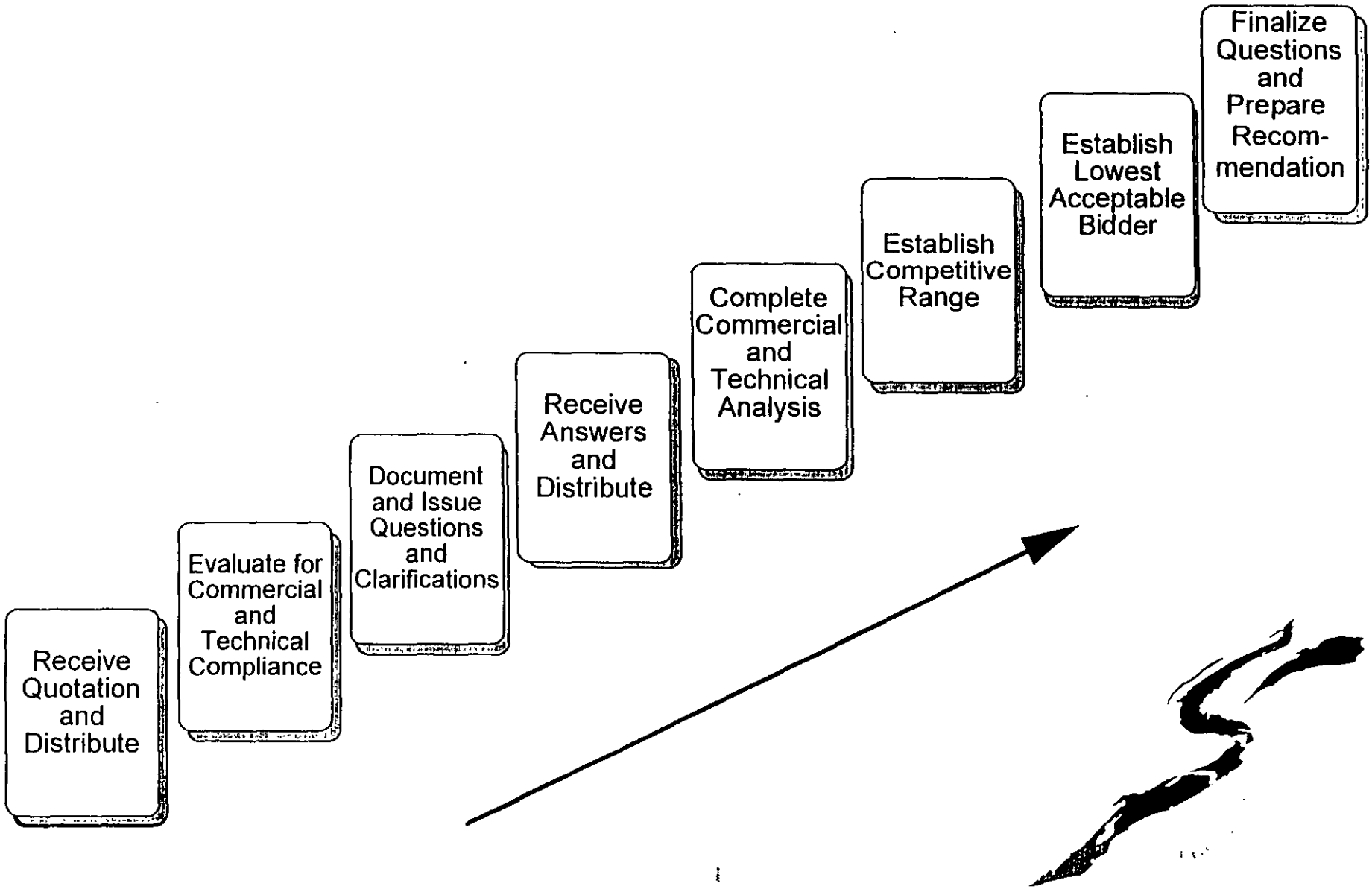
Cost Factors

- Material Cost
- Payment Terms
- Price Escalation
- Inland Freight
- Ocean Freight
- Overseas Inland Freight to Jobsite
- Air Freight
- Extended Warranty
- Document Charges
- Export Packaging Charges
- Customs Clearance
- Spare Part Discounts
- Service Representative Cost
- Drawing Approval Cost
- Progress Payments
- Cost of Cash
- Engineering Data Cost
- Equipment Tag Cost
- Cutting Charges
- Drum / Reel / Cylinder Deposits
- Reel Cover Charge
- Surplus / Restocking
- Import Duties
- Storage Cost
- Insurance Cost
- Expediting
- Inspection
- Taxes

Additional Factors

- Supplier Evaluation Rating
- Incoterms
- Ship Point
- Estimated Shipping Weight
- Estimated Shipping Volume
- Required Ship Date
- Promised Ship Date
- Exceptions to Specifications
- Exceptions to T&C's
- Drawing / Data Promise Dates
- Project Schedule
- Local Service
- Quotation Validity
- Accept P.O. for Partial Quantity
- Quotation "All or None"
- Minimum Order Quantity
- Exchange Rates
- Fabrication in Transit
- Freight Equalization
- Client Directive

B. Bid Analysis / Evaluation



C. Recommendation Through Award

- Recommendation
  - ✓ Procurement
  - ✓ Engineering
  - ✓ Joint
- Pre Award Meetings
  - ✓ Strategy
  - ✓ Agenda
  - ✓ Participants
  - ✓ Specific to Bidder
  - ✓ Take Good Meeting Notes
  - ✓ Action Item Responsibility
  - ✓ Agree on Path Forward
  - ✓ Establish Closure Date
- Obtain Approval to Proceed
  - ✓ Project
  - ✓ Client
  - ✓ Other
- Award Purchase Order
  - ✓ Advise Successful Bidder
  - ✓ Issue Purchase Order
  - ✓ Issue Regret Letters to Unsuccessful Bidders
  - ✓ Distribute and File

D. Module Review Exercise

In module five we developed an RFQ #GMS-A-001 for 10 pumps (P101 through P110) and issued bids to three suppliers. The bids have been received and we are now ready to start the "Bid / Analysis" process.

The RFQ and Sample Purchase Order call for the pumps to be furnished, fabricated, tested, inspected and delivered in accordance with the specifications and data sheets.

The project is on a fast track schedule and all ten pumps are required at site no later than 13 weeks from tomorrow. You are planning on completing the bid analysis and personally rushing the package through the approval process today. You will be issuing the purchase order to the approved bidder tomorrow.

It should also be noted that vendor prints are required for approval four (4) weeks After Receipt of Order and a two (2) week turnaround time is estimated by engineering. The purchase of material, as well as release for fabrication shall only be upon approval/review of vendor prints.

D. Module Review Exercise

Your tasks for this exercise are:

1. Review information and make a recommendation for award ensuring that all technical and commercial issues have been resolved to arrive at the best balanced choice.
2. Once the source of supply is selected, list some negotiation techniques that apply to further project savings or added value with this bidder.

Things to consider during the bid analysis process:

1. Item Spread on next page
2. Budget $85,000
3. RAS 13 weeks
4. Engineering to return drawings 2 weeks after receipt of drawings
5. In order to meet schedule, each bidder must rely on an overseas resource for four (4) pumps (P105 - P108). The overseas resource will ship these pumps to a bidder who will mount the motor on each pump base and then ship the pump assembly to the jobsite.
6. There is an incentive / penalty clause in the prime contract which relates to delivery. Having agreed to RAS dates with the client, any schedules that can be compressed by a week or more means a $2,500 bonus to FD. On the other hand, a penalty of $2,500 can be charged to FD for each week of slippage.
7. The client requires an 18 months from purchase and 12 months from start-up warranty for all equipment.
8. Any extra inspection visits can be estimated at approximately $718 per visit.
9. Commercial Information:

	Chump's Pumps		Pump & Circumstance		H.R. Pumps & Stuff
Performance Ratings	80%		91.3%		70%
Freight Costs	$3,500.00		$0.00		$2,208.00
FOB Point	Seneca, NY		Jobsite		Morton, IL
Engineering	Net 30		Net 30		2/10 N30
Warranty	18 / 12		12		18 / 12

10. All three bidders are technically acceptable and the client prefers Pump & Circumstance. Engineering recommends Pump & Circumstance based on lowest bid.

D. Module Review Exercise

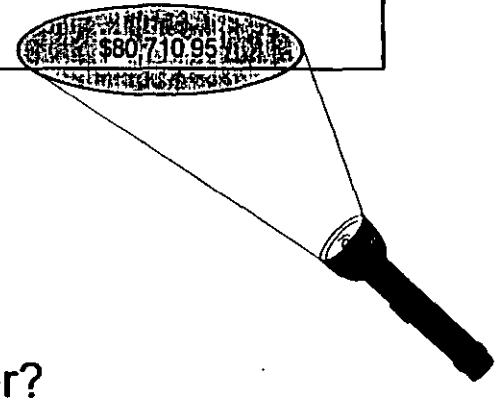
Engineering Analysis & Item Spread

			Chump's Pumps		Pump & Circumstance		H.R. Pumps & Stuff	
Item No.	Qty.	Description	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
1	1	Pump P101	$10,057.00	$12,277.00	$5,779.00	$7,468.00	$4,625.00	$6,445.00
		Motor	$2,220.00		$1,689.00		$1,820.00	
2	1	Pump P102	$8,216.00	$10,436.00	$5,779.00	$7,468.00	$4,625.00	$6,445.00
		Motor	$2,220.00		$1,689.00		$1,820.00	
3	1	Pump P103	$8,216.00	$10,436.00	$5,779.00	$7,468.00	$4,625.00	$6,445.00
		Motor	$2,220.00		$1,689.00		$1,820 00	
4	1	Pump P104	$8,216.00	$10,436.00	$5,779.00	$7,468.00	$4,625.00	$6,445.00
		Motor	$2,220.00		$1,689.00		$1,820.00	
5	1	Pump P105	$8,216.00	$10,436.00	$5,779.00	$7,468.00	$4,625.00	$6,445.00
		Motor	$2,220.00		$1,689.00		$1,820.00	
6	1	Pump P106	$5,801.00	$9,921.00	$4,347.00	$7,873.00	$4,550.00	$9,240.00
		Motor	$4,120.00		$3,526.00		$4,690.00	
7	1	Pump P107	$4,628.00	$8,748.00	$4,347.00	$7,873.00	$4,550.00	$9,240.00
		Motor	$4,120.00		$3,526.00		$4,690.00	
8	1	Pump P108	$4,628.00	$8,748.00	$4,347.00	$7,873.00	$4,550.00	$9,240.00
		Motor	$4,120.00		$3,526.00		$4,690.00	
9	1	Pump P109	$4,628.00	$8,748.00	$4,347.00	$7,873.00	$4,550.00	$9,240.00
		Motor	$4,120.00		$3,526.00		$4,690.00	
10	1	Pump P110	$4,628.00	$8,748.00	$4,347.00	$7,873.00	$4,550.00	$9,240.00
		Motor	$4,120.00		$3,526.00		$4,690.00	
		Engn. / Insp. / Documentation		$0.00		$0.00		$1,125.00
		Witness Testing		$0.00		$1,621.00		$1,860.00
		Total Price Items Quoted		$98,934.00		$78,326.00		$81,410.00
		Delivery - Drawings (ARO)		3 wks		4 wks		1 wk
		Delivery - Equipment (ARAD)		10-12 wks		8 wks		6 - 8 wks
		(Est.) Jobsite Arrival		1 wk		1 wk		1 wk

D. Module Review Exercise

Suggested Answers

	Chump's Pumps	Pump & Circumstance	H.R. Pumps & Stuff
Total Price Items Quoted	$98,934.00	$78,326.00	$81,410.00
Freight Costs	$3,500.00	$0.00	$2,208.00
Terms of Payment	$0.00	$0.00	($407.05)
Warranty	$0.00	$500.00	$0.00
RAS incentives/penalties (13 weeks)	$12,500.00	$5,000.00	($2,500.00)
Total Cost	$114,934.00	$83,826.00	$80,710.95



Strategies / Negotiation

Performance Incentives for Supplier?

Traffic?

Surveillance?

Paymen' erms?

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Módulo III "Suministros"
Del 21 al 23 de mayo.

Purchase Order Administration

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P101
MODULE SEVEN

Purchase Order Administration

MODULE 7
Purchase Order Administration

Purpose: To provide an overview of the buyer's responsibilities for executing a purchase order

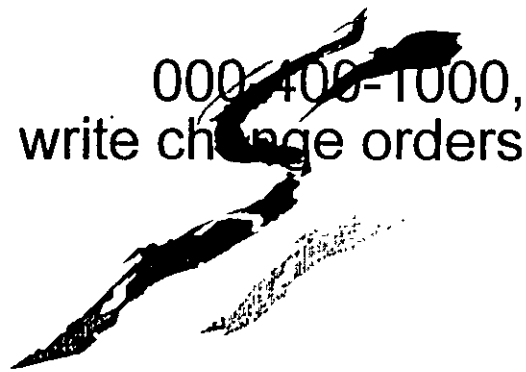
A. Change Orders
B. Material Safety Data Sheets
C. Handling Invoices
D. Surplus Material - Procurement's Responsibility
E. Backcharges
F. Measurement of Supplier Performance
G. File Set Up, Maintenance, Close-out & Retention
H. Module Review Exercise

A. Change Orders

A change order is normally required to a Purchase Order when one of the following circumstances occur:

- Any changes in price
- Revising or changing commercial terms
- Correcting a pricing error
- Revising a tag number
- Whenever added or decreased expenditures are required (i.e. increase or decrease of quantity of material)
- Any technical change (i.e. change in specification)
- Any changes in schedule dates (i.e. shipping date)
- Whenever part or all of an order is canceled
- To cancel and reissue a Purchase Order
- Whenever Surpluses are accepted

Note: Refer to Fluor Daniel Procurement Practice pages 4 - 16, for examples of how to write change orders for the above conditions.



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B. Material Safety Data Sheets

- Successful bidders on all purchases destined for U.S. jobsites must complete a U.S. Department of Labor form OSHA-20, Material Safety Data Sheet (MSDS) or equivalent. Otherwise they must submit a disclaimer statement certifying that the material is not a hazardous or toxic substance as defined by federal regulation.
- The buyer is responsible for distributing completed MSDS, or equivalent, and executed disclaimer statements as follows:
  A. Copy for the Purchase Order file
  B. Original and one copy to the field construction manager at the jobsite

C. Handling Invoices

Buyers may be asked to assist in the processing of invoices. If an invoice is addressed to a buyer, forward it to the appropriate Accounts Payable group. Assistance may be required for the following reasons:

- Verification of a progress payment application (i.e. Have submittal drawings been received. The applicable engineer and document control should verify all receipt of drawings.)
- If there is a discrepancy between what is stated in the Purchase Order and what is stated in the seller's invoice (i.e. payment terms).
- Verification for final payment. (i.e. has all documentation been received; are all materials / equipment received at site; is all change order work complete; are backcharges, deficiencies, surplus material problems resolved?)

Note: The decision to issue a change order will be in accordance with the project procurement procedure.

- A copy of all documentation justifying any decisions by the buyer must be maintained in the Purchase Order file.

5

D. Surplus Material - Procurement's Responsibility

Project management must determine what is surplus material. Ensure that you receive an approved documented inventory list.

- What is procurement's role in disposing of surplus material?
  Determine who and at what price the material will be liquidated / returned.
- Five common ways to dispose of surplus material:
  1. Retain and hand over to client (cost plus vs lump sum).
  2. Offer to other Fluor Daniel projects.
  3. Return to Seller (stress importance of buy back clauses, return authorization numbers, etc.)
  4. Sell to general public, surplus dealers, employees.
  5. Donate to charitable causes.
- Remember that if no buy back clauses have been included, restocking charges are subject to your best negotiations.
- If it is a project caused surplus due to over ordering, a change order should be issued to finalize the value of the purchase. This could mean the issuance of a credit if the Purchase Order has been closed.
- If it is a Seller caused surplus, the Seller must take the surplus back with no restocking charge including all applicable freight charges (in and out).

E. Backcharges

What are backcharges?

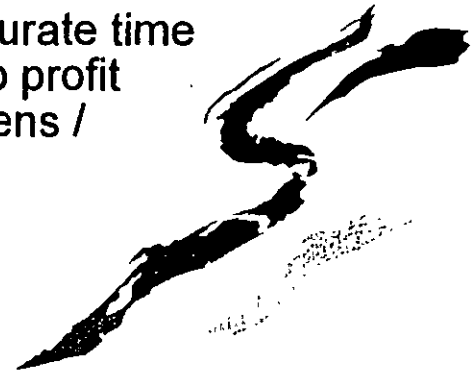
Webster defines it as... undefined. The term is unique to our industry. It is more commonly called "claims". Our practices define backcharges as a means for recovering cost from sellers, freight carriers and / or insurance carriers that result when equipment or material arrive in a defective condition, or is unsuitable due to seller error or transportation damage.

What is Procurement's role in the handling of backcharges?

- Procurement has the lead role in handling claims, from notification of the proper party, to collection of documentation, to resolution of the claim.

Procedure:

1. Immediately notify the seller and the carrier of any visual damages or defects. Take photographs or video if at all possible.
2. Discuss with the project the timing / technical resources required for corrective action. Offer the responsible party the opportunity to correct the problem but define the time frame for the fix.
3. Obtain written documentation on the agreed upon solution.
4. If Fluor Daniel is to make the repair, ensure that you have accurate time sheets and material invoices to document your claim. No profit is to be added to Fluor Daniel's work but applicable burdens / indirects are appropriate.
5. Don't let it drag out too long as time hazes everything!



F. Measurement of Supplier Performance

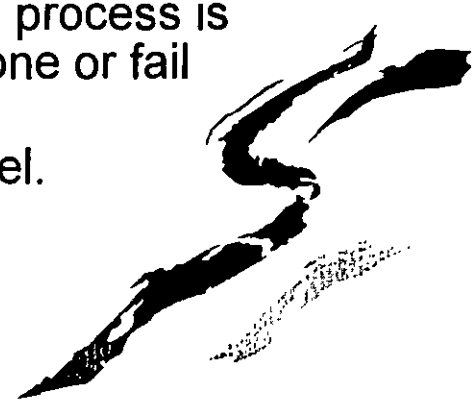
Why evaluate suppliers?

1. To collect performance data
2. Give us a performance check
3. Provide supplier with ways to improve
4. Show clients we deal with top performers
5. Aid in selection of bidders lists
6. Justify award recommendations

Procedure: Supplier evaluations shall be done on ALL purchase orders with values of $50,00 or more

Working Tips

1. Initiate the form as part of the work process when the order is issued. By doing this the engineer should be filling out the form during the life of the order as opposed to when the job is near completion. If this process is put off until the end of the job, the engineer may be gone or fail to remember the specifics.
2. Hold a brief meeting if it is a new project with new personnel. Build value for the data by showing them where their feedback goes. Get project management involved for the needed support to make the program a success.



G. File Set Up, Maintenance, Close-Out and Retention

- File set up:

  Although not required for every order, file tabs are recommended for all orders which are custom orders or subject to change. Maintenance of files is also handled easily when the tabs are used because filing is per the tab title. Ensure that filing is done chronologically to ease in data collection for claim resolution or audit response.

- Close-out of files:

  Utilizing the checklist found in Practices will ensure close-out of purchase orders are handled effectively.

H. Module Review Exercise

True or False

___ A Change Order should be written for a supplier name change.

___A buyer should process invoices instead of Accounting.

___It is not necessary to contact the seller on backcharge issues.

___The buyer should wait until the end of the project to process backcharges.

___Supplier evaluations should be done for orders greater than or equal to $50,000.00.

H. Module Review Exercise

Answers

True or False

T A Change Order should be written for a supplier name change.

F A buyer should process invoices instead of Accounting.

F It is not necessary to contact the seller on backcharge issues.

F The buyer should wait until the end of the project to process backcharges.

T Supplier evaluations should be done for orders greater than or equal to $50,000.00.

DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

Módulo III "Suministros"
Del 21 al 23 de mayo.

Surveillance / Inspection

Palacio de Minería
1998.

P101
MODULE NINE

Surveillance / Inspection

MODULE 9
Surveillance / Inspection

Purpose: To provide a general understanding of basic Surveillance and Inspection practices with an emphasis on:

A. Surveillance / Inspection
B. Levels of Surveillance
C. Network
D. Execution
E. Module Review Exercise

A. Surveillance vs Inspection

Surveillance: The monitoring of the supplier quality and inspection program.

Inspection: The physical inspection of material / equipment conformity to quality standards.

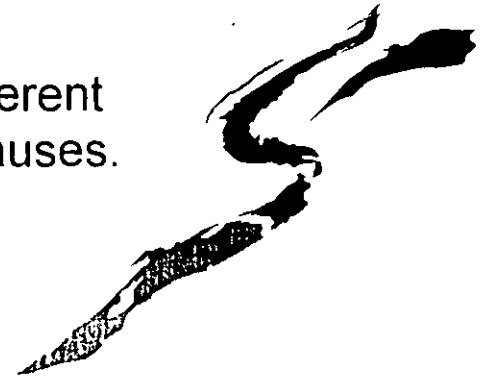
Reasons for performing surveillance or inspection:

- Put the responsibility of the performance totally on the supplier
- Improve supplier quality performance
- Improve supplier relations
- Reduce inspection efforts and related costs

These services should begin during the front end planning phase and development of the project equipment list.

The project team which includes engineering, procurement, construction and the client decide which packages will require surveillance or inspection.

The procurement practices identifies language required for the different criticality ratings which need to be in the Sample P.O. and P.O. clauses.



B. Levels of Surveillance

Criticality Rating

Equipment Characteristics
- Design Process Complexity (1-4)
- Design Maturity (1-4)
- Manufacturing Complexity (1-4)

Service Characteristics
- Operating (1-4)
- Personnel Safety (1-4)
- Financial Consequences (1-4)

1	2	3	4
6-10	11-15	16-20	21-24

Supplier Quality Surveillance Assignment Instructions

1 ➡ Comprehensive

2 ➡ Standard

3 ➡ Reduced

4 ➡ Limited

Supplier Experience Rating

1 ➡ No Experience

2 ➡ Minimal Experience

3 ➡ Previous Experience

4 ➡ Extensive Experience

The level of surveillance required for a given commodity is determined by averaging the results of the (3) rating processes described on this page.

Supplier Quality Rating

Purchase Order evaluations entered into Global Supplier Manager provide an excellent means for evaluating previous supplier performance

These ratings are based on a 100 point scale.

1	2	3	4
< 60%	60-89%	90-99%	100%

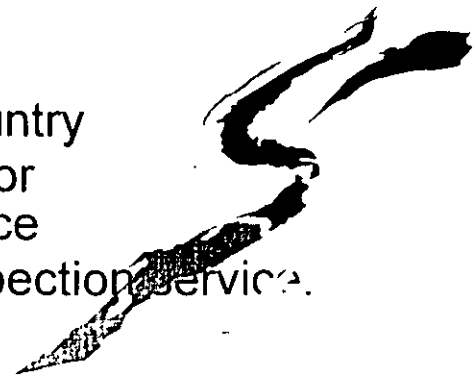
C. Network

Each project is assigned a Project Surveillance Coordinator (PSC) who supports efforts durin the planning and execution phases.

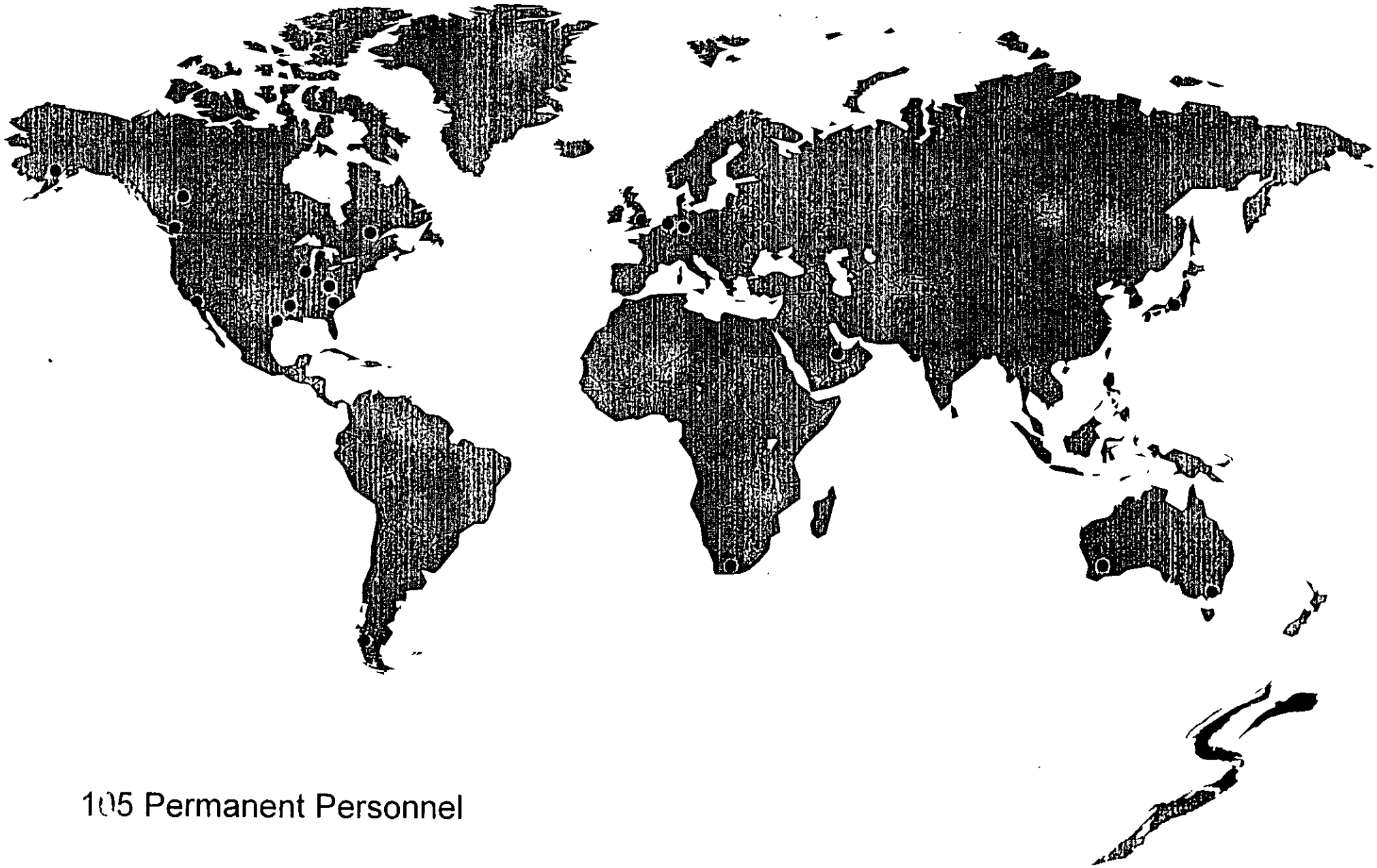
The PSC works with the PPM to develop a Project Surveillance Plan. The following elements make up this plan:

- Assignment Instructions
- Alignment Meetings
- Supplier Quality Surveillance System (SQSS)
  - Nonconformance Tracking
- Supplier Quality Reporting System (SQRS)
  - Surveillance Reports
  - Nonconformance Reports
  - Release Reports
- Measurement of Supplier Performance
- Assignment Close-out
- Supplier Surveys
- Supplier Quality Program Evaluation (SQPE)

Assignments are made and coordinated with the local, state or country inspector (see attached map). For countries where there is no Fluor Daniel representative, the PSC will contact the responsible FD office (based on geographical location) for obtaining a qualified local inspection service.

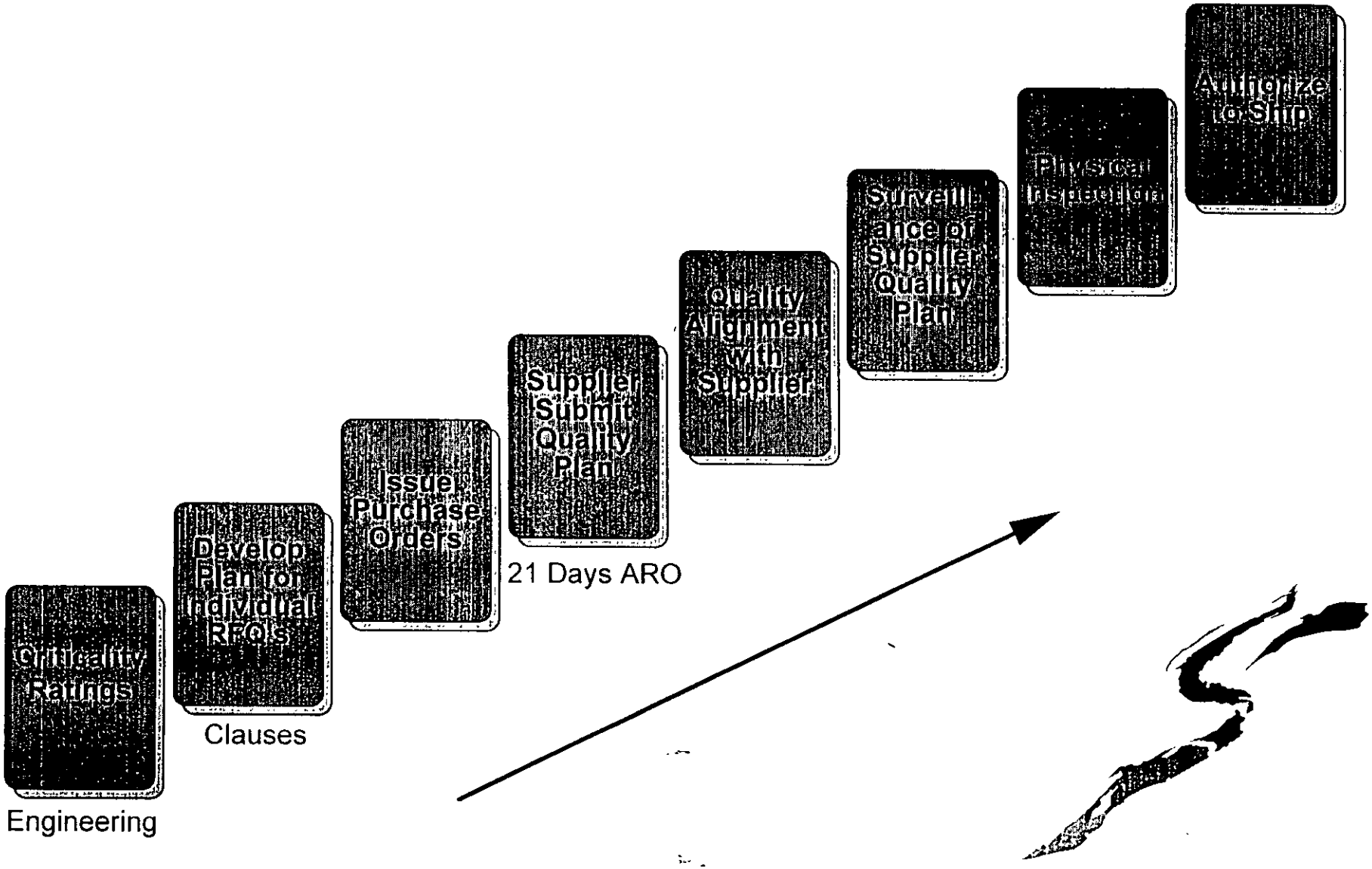


C. Network - International Resources



105 Permanent Personnel

D. Execution


Criticality Ratings
Develop Plan for Individual RFQ's
Clauses
Issue Purchase Orders
Supplier Submit Quality Plan
21 Days ARO
Quality Alignment with Supplier
Surveillance of Supplier Quality Plan
Physical Inspection
Authorize to Ship
Engineering

E. Module Review Exercise

As mentioned in previous modules, 10 chilled water pumps have been purchased (P101 through P110).

Use the following criteria to discuss resolutions:

- P105 through P108 are being manufactured and shipped from Sweden.
- Assertive expediting has maintained schedule for all pumps.
- The criticality ratings are :

P101 to P104 and P109 to P110	Level 3
P105 to P108	Level 2

- Surveillance is complete and all pumps are ready for final inspection.
- All pumps pass final inspection except P109 and P110 (pump base problem).

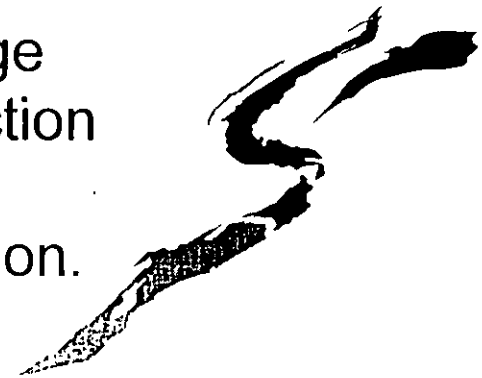
Questions:

1. How many assignment sheets will need to be prepared by the PSC?
2. What is the course of events for P109 and P110? (inspector / project)

E. Module Review Exercise

Answers

1. Two assignment sheets - (two manufacturing locations) requires one for each inspector.
2. Course of Events
   - Inspector issues supplier a non-conformance report (NCR).
   - Inspector notifies the PSC before leaving the shop and informs him / her of the pumps' status.
   - PSC arranges a conference call with the project and determines severity of the situation.
   - A decision needs to be made by the project whether to:
     - Ship to meet schedule and supplier fix in the field
     - Ship to meet schedule and field fix with backcharge
     - Do not ship and supplier fix in shop with re-inspection
     - Acknowledge NCR and accept "as is"
   - Inspector closes out NCR which documents resolution.



DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

Módulo III "Suministros"
Del 21 al 23 de mayo.

Expediting

Palacio de Minería
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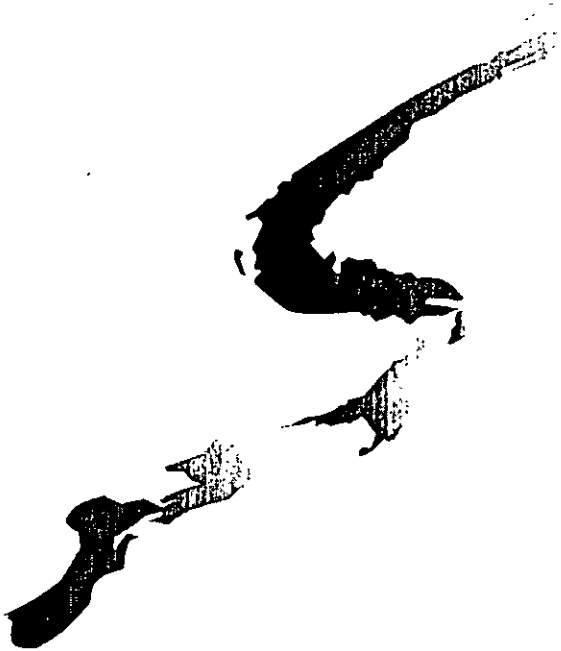
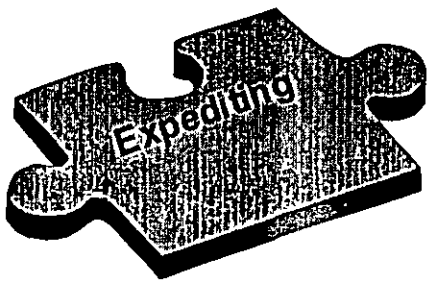


P101
MODULE EIGHT

Expediting



MODULE 8
Expediting

Purpose: To provide a general understanding of basic expediting practices with an emphasis on:

A. Expediting
B. Levels
C. Summary Level Work Process Flow Chart
D. Work Process Definitions
E. Execution
F. Module Review Exercise

A. Expediting

What is it?

Expediting is a process by which we monitor the status of schedule dates from the seller a promised in thePurchase Order and exert all efforts to support that schedule.

Why expedite?

To ensure that all material requirements are received at the jobsite on time and in good condition.

What are the key elements of effective expediting?

- Persistence
- Well written orders
- Communication
- Understand the Supplier's order entry process
- Order entry & manufacturing process
- Read and understand the order
- Maintain good notes & records
- Teamwork
- Reporting

Do all orders get the same amount of attention?

No, see section B. Levels

B. Levels of Expediting

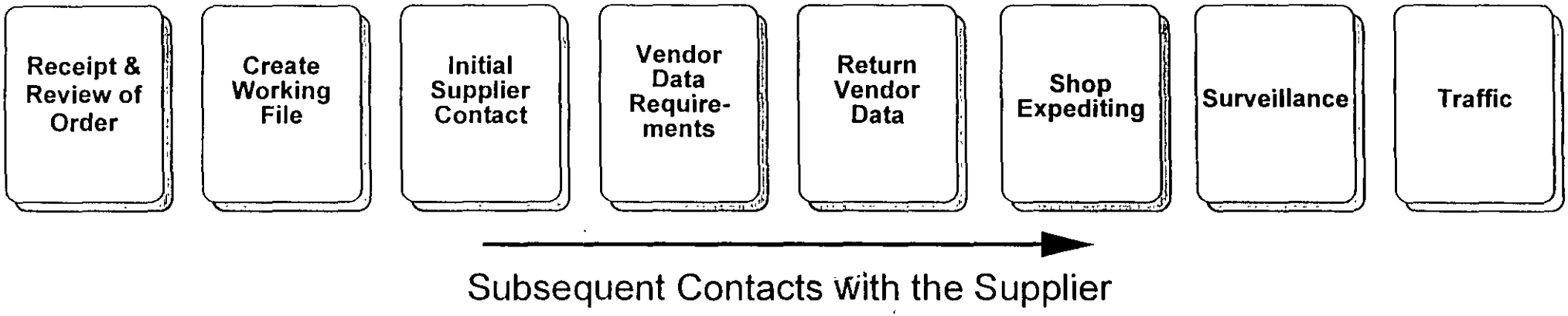
	A - Major Equipment Systems	B - Equipment	C - Instruments	D - Bulk Material
Criteria	Long Lead	ETA within 4 weeks	ETA over 4 weeks	Stock to 2 week deliveries
	Equipment complexity		Less critical	
	Equipment criticality to Plant Process & Start Up			
	Schedule			
	Supplier experience			
	Sub-supplier involvement			
Expediting Required	Phone	Phone	Phone	Phone
	Physical	Physical (if required)		
Plan	Weekly phone / fax	Bi-weekly phone / fax	Monthly phone / fax	Phone / fax at initial order
	Monitor progress against supplier production program	Monitor progress against supplier production program		Phone / fax by exception
	Expedite sub-suppliers	Expedite sub-suppliers		
	Coordinate physical visits	Coordinate physical visits		
	Verify completion of material & fabrication milestones	Verify completion of material & fabrication milestones		
	Authorize progress payments for milestone completion	Authorize progress payments for milestone completion		
	May require pro-active acceleration discussions			

Do levels of expediting change for particular orders over time?

Yes - Typically "A" levels turn into "B" levels with the progression of the order. Contacts are changed from weekly to bi-weekly.

C. Summary Level Work Process

This summary level chart introduces key steps of the Expediting work process for this overview. Detailed flow charts exist in Folio to assist in daily activities.

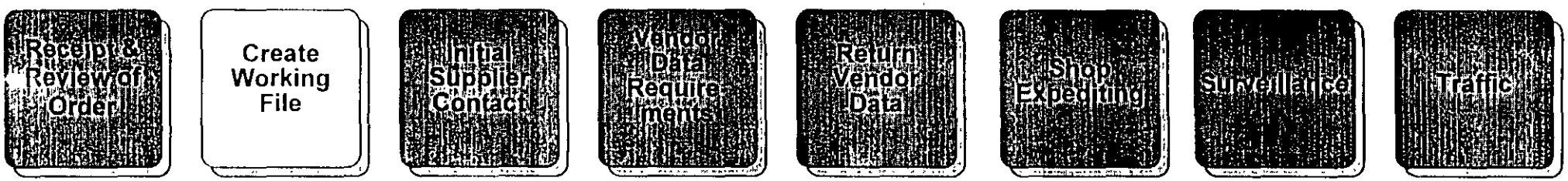


D. Work Process Definitions

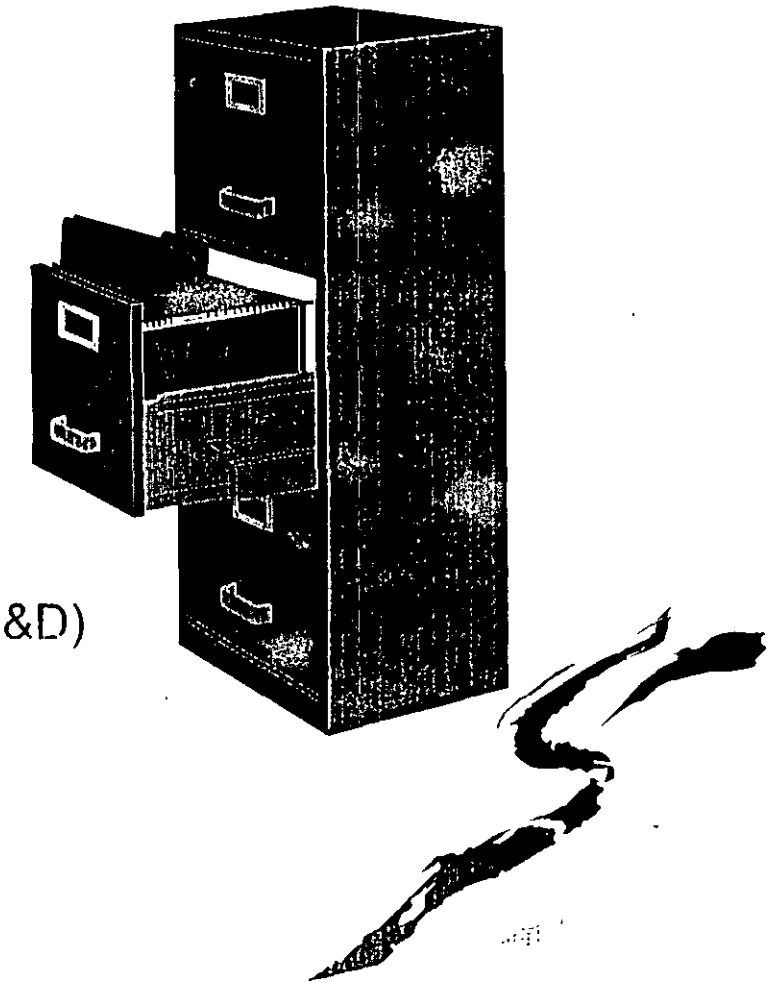
Receipt & Review of Order | Create Working File | Initial Supplier Contact | Vendor Data Requirements | Return Vendor Data | Shop Expediting | Surveillance | Traffic

- Receive and Review Purchase Order
  - ✓ Receive: each order should include
    - ► Purchase Order
    - ► Bill of Material (BOM)
    - ► Vendor Data Requirement Sheet (VDR)
    - ► Inspection Check List
  - ✓ Review:
    - ► Schedule
    - ► Drawing Submittals Required
    - ► Authorization of Material Purchase
    - ► ARO After Receipt of Order
    - ► ARD After Return of Drawings
    - ► Payment Terms vs. Milestone Activity
    - ► Special Handling
    - ► Special Storage
    - ► Logistics
    - ► Surveillance

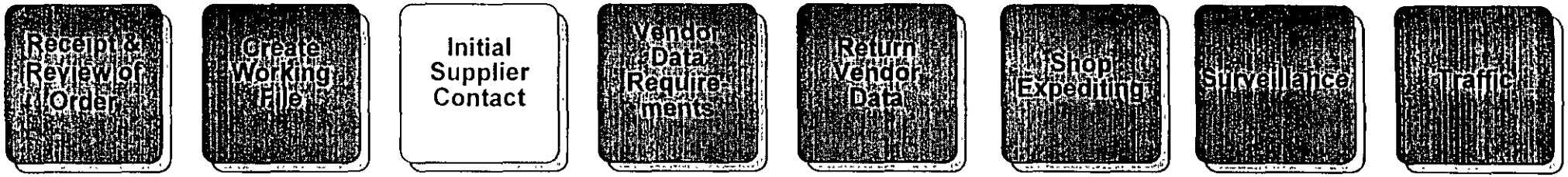
D. Work Process Definitions



- Create Working File
  - ✓ Purchase Orders
  - ✓ Change Orders
  - ✓ Correspondence
  - ✓ Document Transmittals
  - ✓ Reports
    - ► Shop Expediting
    - ► Surveillance
  - ✓ Shipping Notice
  - ✓ Field Receiving Reports (FRR)
  - ✓ Overage, Shortage and Damage Reports (OS&D)

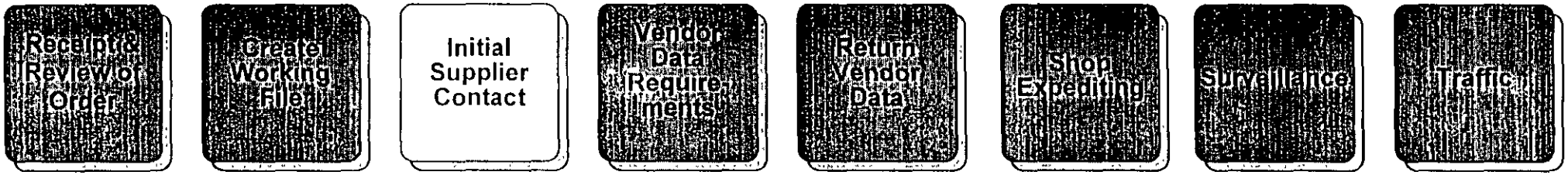


D. Work Process Definitions



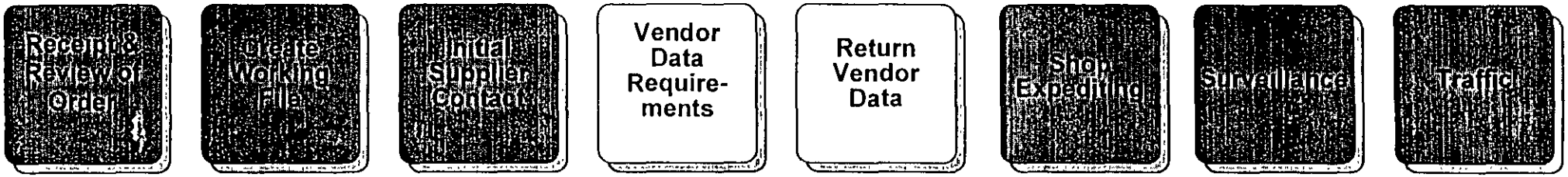
- Initial Supplier Contact
  - ✓ Introduction
    - ► Exchange Chain of Commands
      - Engineering
      - Customer service
      - Production Supervisor
      - Project Manager
  - ✓ Order Entry
    - ► Review Purchase Order Requirements
    - ► Confirm Supplier receipt of P.O.
    - ► Request status of signed Purchase Acknowledgment
    - ► Confirm that Order Entry is complete at Supplier facility
  - ✓ Important Facts to Discuss with Supplier
    - ► Determine engineering & fabrication facility location
      - Shop capacity
    - ► Confirm surveillance requirements
    - ► Confirm labor posture
      - Contract expiration
      - Potential strikes

D. Work Process Definitions



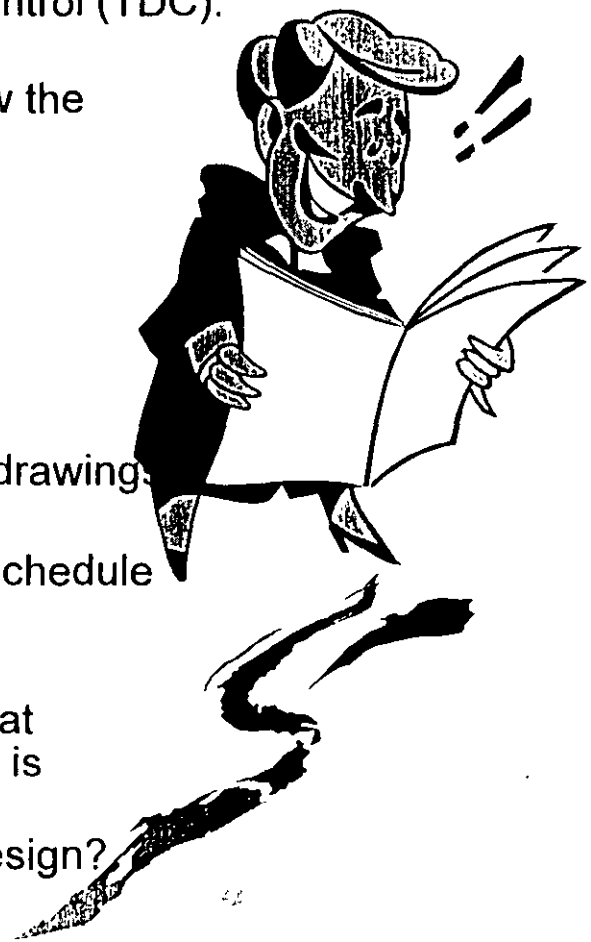
- Initial Supplier Contact **(CONTINUED)**
  - ✓ Important Facts to Discuss with Supplier (continued)
    - ► Determine material status
      - Stock items
      - Buy out items
      - Long lead items
    - ► Establish regular reporting time frames and criteria
      - Status of material... if not in stock, date due in
      - Status of manufacturing... milestone activities with start & end dates
      - Inspection schedule... number of inspections and tentative schedule
      - Special packaging... what is required and how much time to execute
      - Ship schedule... reconfirm ship dates
    - ► Review invoicing and shipping information
    - ► For major sub-vendors, obtain a copy of all (unpriced) purchase orders

D. Work Process Definitions

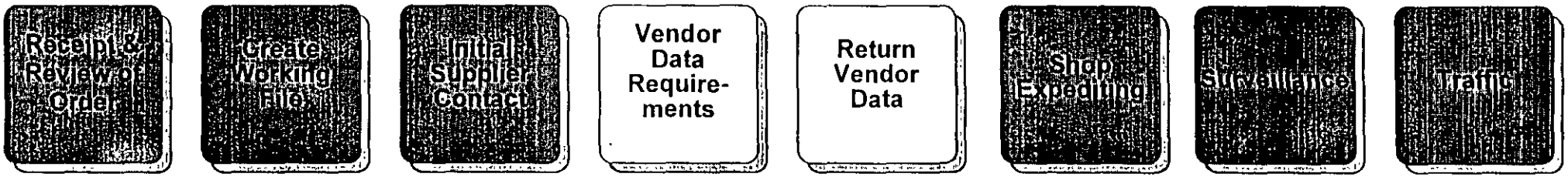


- Vendor Data Requirements - One of the most difficult processes to organize and maintain. Documents are expedited by Procurement Expediters and / or Technical Document Control (TDC).
  - ✓ Pre-Award (Buyer)
    - ► Spend time identifying and agreeing on what data is required and how the Supplier will submit.
    - ► Amend the VDR (Vendor Data Requirements) sheet to reflect agreed submittal requirements.
    - ► Negotiate progress payments based on drawing submittals.
    - ► Think about how to handle final data.
    - ► Request standard documents from the Supplier rather than special engineered drawings.
    - ► Request certified drawings on standard equipment instead of review drawings.
  - ✓ Post Award (Expediter)
    - ► Contact Supplier and reconfirm vendor document requirements and schedule
    - ► Advise the responsible buyer when there is conflicting status.
    - ► Expedite and report status until documents arrive.
    - ► Due to many partial issues of documentation, a project must agree that milestone actual dates are satisfied when the following question is answered with a "yes":

      Does the information received allow engineering to further its design?



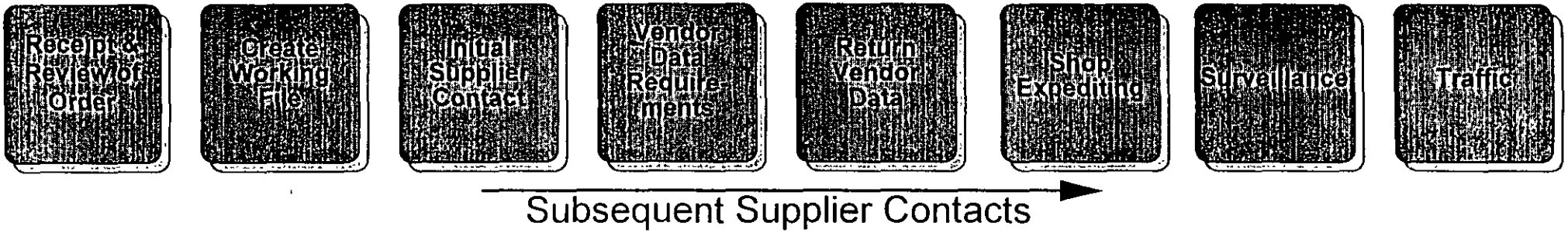
D. Work Process Definitions



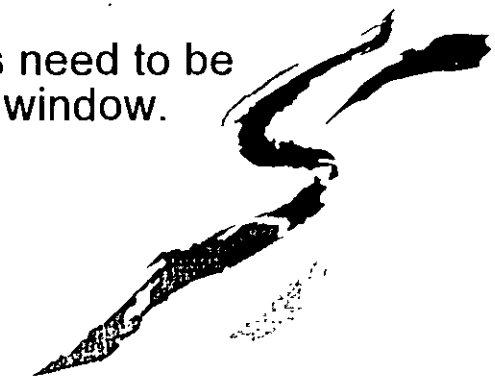
- Vendor Data Requirements **(CONTINUED)**
  - ✓ External Expediting
    - ► Obtain current status from suppliers.
    - ► Advise Suppliers of internal document review status.
  - ✓ Internal Expediting
    - ► Verify receipt of documents in TDC (Technical Document Control).
    - ► Monitor squad check review.
    - ► Confirm return issue of documents to supplier.
    - ► Document review status codes:

A	Proceed
B	Proceed as Noted - incorporate comments on certified drawings
C	Do Not Proceed - resubmit for review
D	Information Only - acknowledge receipt

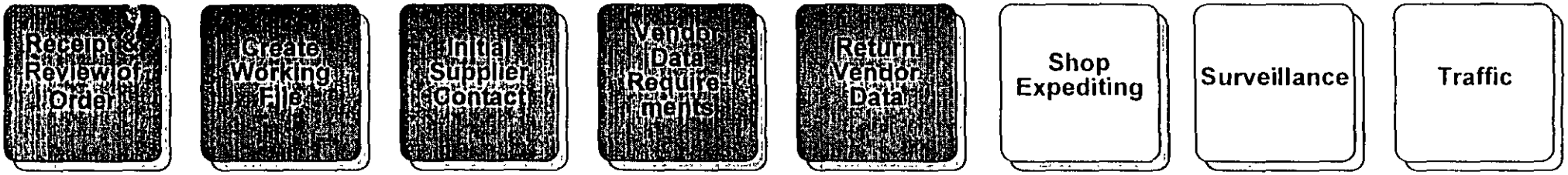
D. Work Process Definitions



- Subsequent Supplier Contacts
  - ✓ Maintenance calls with Suppliers to obtain current status in all areas of the schedule:
    - ► Drawings
    - ► Material purchase
    - ► Fabrication
  - ✓ Fabrication Process
    - ► Learn each step of the fabrication process.
    - ► Record status as steps are completed.
    - ► Review the relationship between duration of fabrication steps and overall schedule.
    - ► Recognize plant shutdowns and confirm that these were accounted for up front.
    - ► Ask about potential bottle necks.
    - ► Determine the Supplier's critical milestone dates. (i.e. Drawings need to be returned by a certain date in order to meet the fabrication window. In the event of a change, does the change impact normal fabrication?)



D. Work Process Definitions



- Shop Expediting
  - ✓ Physical visits to the Supplier's shop to identify problems maintaining schedule.
  - ✓ Physical visit to the Supplier's shop to assist in accelerating schedule
    - ► Local surveillance service
    - ► Project personnel (i.e. PPM, Project Engineer, Project Manager, Client)
- Surveillance (refer to module 9)
  - ✓ Level of criticality determined during surveillance planning
    - ► Surveillance Coordinator receives a copy of the Purchase Order and generates the assignment sheet.
    - ► Communicates status to Expediter via report and / or phone call.
- Traffic Coordination (refer to module 10)
  - ✓ Two weeks notification prior to shipment.
  - ✓ Weights and dimensions required

E. Expediting Execution

Expediting Approaches to Schedule Impacts:

- Schedule Delay - fabrication and / or shipping current promise dates exceed original promise schedule.
  - ✓ Cause for delay
  - ✓ Seller corrective action
  - ✓ Fluor Daniel assistance with sub-suppliers
  - ✓ Alternate sources of material supply
  - ✓ Extra shifts and overtime
  - ✓ Shop priority for Fluor Daniel work
- Accelerate Schedule - due to project change, may need one order or an entire area of orders earlier
  - ✓ Shop sequence
  - ✓ Extra shifts and overtime
  - ✓ Premium / Penalty
  - ✓ Fluor Daniel assistance with sub-suppliers
- Changes in Scope - design changes can happen at any time
  - ✓ Percentage complete
  - ✓ Cost and schedule impact
- Supplier and Sub-supplier non performance - punch list items after inspection ignored
  - ✓ Fluor Daniel to fix in the field and backcharge the Supplier
  - ✓ Supplier to fix in the field
  - ✓ Return equipment to the Supplier for correction
- Strikes and company closures - be creative
- Shutdowns
  - ✓ Project - planned time frame for construction to do tie-ins to existing lines
  - ✓ Supplier - planned vacation period usually summer and Christmas holidays

    Note: European companies often close for an entire month

D. Module Review Exercise

As mentioned in previous modules, 10 Chilled Water Pumps have been purchased (P101 through P110).

Use the following criteria to discuss resolutions:

- P105 through P108 will be manufactured and shipped from Sweden.
- The original order showed all pumps shipping on the same date.
- Vendor data was submitted at the same time but P101 through P104 had an engineering hold due to a change in motor size during the review cycle and was returned one month later than the balance.
- Required at site dates remain the same per Construction.

Questions:

1. Because P105 through P108 are shipping from Sweden, they will not have the same ETA dates as the other pumps. In order to meet the RAS dates, what action can be taken?
2. How can RAS dates be met for P101 through P104 which were released one month later than the other pumps?
3. What is required administratively as a result of #2 above.

D. Module Review Exercise

Answers

1. This should have been addressed during the Purchase Order award stage. However...
   A. By expediting closely with the Supplier, earlier ship dates may be achievable.
   B. Coordinate efforts with surveillance and traffic to reduce potential delays.
   C. Air freight entire pump or just the pump base to support construction activities.
2. Meeting RAS Dates
   A. While the pumps were on hold, it should have been communicated to the Supplier the reason for the hold and determine the degree of risk to only fab release the pumps.
   B. Confirm with the Supplier that the shop window is still achievable and if any fabrication time can be reduced by using additional shifts.
   C. Ship the pump base only or the pumps without motors and assemble in the field.
   D. Identify a better traffic route than LTL (less than truck load).
   E. Fluor Daniel can assist the Supplier in expediting sub-suppliers or locating alternate sources of material.
3. A change order should be generated.

Main Point: executing the order gets more detailed than placing the order and reporting status becomes extremely important!

DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

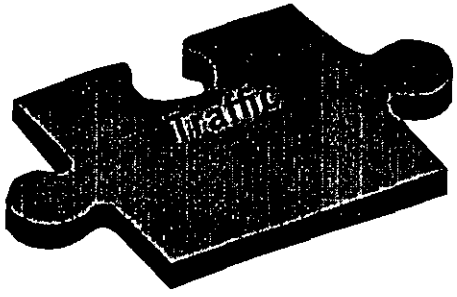
Módulo III "Suministros"
Del 21 al 23 de mayo.

Traffic & Logistics

Palacio de Minería
1998.

P101
MODULE TEN

Traffic & Logistics



MODULE 10
Traffic

Purpose: To provide a general introduction to traffic with an emphasis on:

A. Traffic & Logistics
B. Shipping Terms
C. Execution
D. Module Review Exercise

A. Traffic and Logistics

What is traffic and Logistics?

It is a way to route articles from shipping point to final destination.

What is a logistics plan?

A strategy and procedure for routing all types of shipments on a project. It identifies shipments for priority and special handling.

Do all projects need a logistics plan?

Yes. The degree of detail and complexity depends on the project (i.e. domestic vs abroad).

Why do we offer a traffic service?

To add value to the project, reduce cost of freight, increase accountability and maintain high quality.

Does each project require a traffic specialist?

No. The traffic and logistics specialist is available to support during logistics planning and answer all questions related to special situations.

Who does the routing of shipments?

The responsible buyer / expediter on routine loads. The traffic specialist when requested.

B. Shipping Terms and Terminology

Standard Freight Terms on a Purchase Order:

Term	Description	Freight Respon.	Title Transfer
FOB Jobsite	Free Onboard to Jobsite	Seller	Final Destination
Shipping Pt	Shipping Point	Buyer	Shipping Pt
Shipping Pt/PPA	Shipping Point / Prepay & Add to Invoice	Buyer	Shipping Pt
Shipping PT/FFA	Shipping Point / Full Freight Allowed	Seller	Shipping Pt

Which freight terms are most desired:

Clients request FOB Jobsite because it puts sole responsibility of shipment on the Seller including damage claims. What they don't realize, is how much markup the seller puts on freight in the purchase order.

- Fluor Daniel prefers Shipping Point with Third Party Billing. This way we can route the shipment the best, fastest and cheapest way as well as manage the payments of freight invoices. A lot of money can be saved on the project by reducing freight costs as well as minimizing any damage claims.

What are Incoterms?

Global shipping terms understood by all countries for shipments abroad. These terms address all aspects of foreign cargo, responsibility of the steps necessary to move the cargo as well as cost (refer to chart).

B. Shipping Terms and Terminology

Breakdown Dividing Responsibility and Charges Between Buyer (Importer) and Seller (Exporter)

Responsibility & Charges → / Service ↓	EXW Ex Works	FCA Free Carrier	FAS Free Alongside Ship	FOB US Port Free Onboard Vessel	CFR Cost & Freight	CIF Cost Insurance Freight	CPT Carriage Paid To	CIP Carriage Insurance Paid To	DAF Delivery at Frontier	DES Delivered Ex Ship	DEQ Delivered Ex Qual Duty Paid	DDU Delivered Duty Unpaid	DDP Delivered Duty Paid
Warehouse Storage at Point of Origin	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Warehouse Labor Charge at Point of Origin	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Export Packing	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Loading at Point of Origin	BUYER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Inland Freight	BUYER	BUYER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Port Receiving Charges	BUYER	BUYER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Forwarders Fee	BUYER	BUYER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Loading on Ocean Carrier	BUYER	BUYER	BUYER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Ocean / Air Freight	BUYER	BUYER	BUYER	BUYER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER	SELLER
Charges in Foreign Port / Airport	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	SELLER	SELLER	SELLER	BUYER	SELLER	SELLER	SELLER
Customs Duties and Taxes Abroad	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	SELLER	BUYER	SELLER
Delivery Charges to Final Destination	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	BUYER	SELLER	SELLER

C. Execution

What must a person be familiar with to route cargo?

- The purchase order and supplier
- The schedule and fabrication location / process
- The local carriers
- The shipping terms and terminology
- The use of Service Guides
- The identification and handling of hazardous materials
- The import / export (customs & tariffs) process
- The processing of oversized loads & special insurance

What are the different types of transportation services?

Carrier	Description	Method
UPS	United Parcel Service	Truck or Plane
A / F	Air Freight	Plane
LTL	Less Than Truck Load	Truck
Exclusive	Dedicated Truck	Truck
R / R	Rail Road	Train
Ocean	Ocean	Ship

D. Module Review Exercise

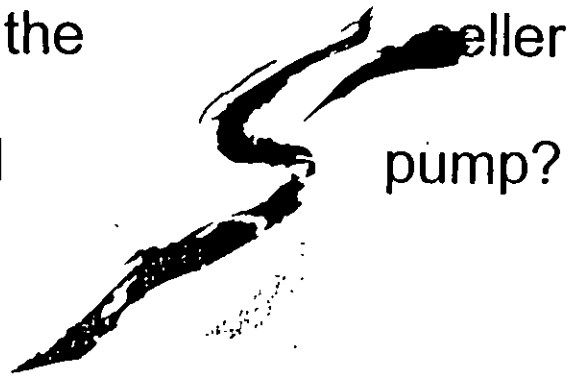
The 10 chilled water pumps (P101 through P110 are ready to ship.

Use the following criteria to answer the questions below

- P101 through P104 & P109 to P110 are shipping from Michigan to the jobsite in Salt Lake City, Utah with P.O. freight terms Shipping Point.
- P105 through P108 are shipping from Sweden to Salt Lake City, Utah with P.O. freight terms FOB U.S. Port
- At delivery, the carrier door was opened and P101 was found damaged.

Questions:

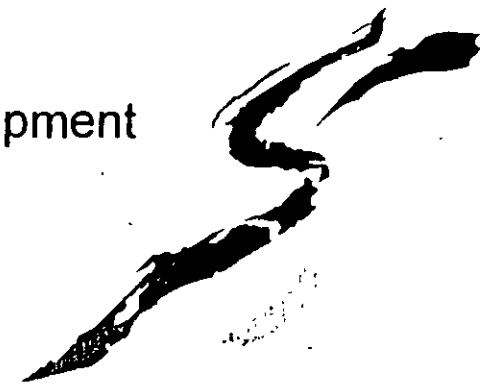
1. What are the traffic steps to move pumps P101 - P104, P109, P110 to jobsite?
2. For pumps shipping from Sweden, what does FOB U.S. Port mean?
3. What incoterm best describes total responsibility of the seller from Sweden to Utah?
4. What steps need to be taken for the damaged P101 pump?



D. Module Review Exercise

Answers

1. The traffic steps required to move pumps from Michigan to Utah are:
   - Ship:
     - ✓ Review schedule to determine if LTL or exclusive truck is required.
     - ✓ Obtain weights and dimensions
     - ✓ Use service guide to identify carrier of choice (FD has contractual agreements with some carriers; consult traffic coordinator)
       Confirm number of distribution points and if cargo is transported to different trucks
       Confirm if single carrier shipment or transfer between carriers
     - ✓ Issue "shipping notice to proceed papers" to carrier
     - ✓ Confirm freight billing information is correct
     - ✓ Coordinate carrier pick-up of cargo
   - Track:
     - ✓ Confirm cargo pick-up
     - ✓ Obtain pro number, trailer number and ETA of shipment
     - ✓ Check with dispatch regularly to determine progression of shipment
     - ✓ Confirm receipt and shipment condition with site receiving



D. Module Review Exercise

Answers

2. FOB U.S. Port means that seller is responsible for all activities to get the cargo loaded onto the ship. As soon as the shipment is loaded, the buyer takes responsibility of the freight, foreign port charges, customs / duties / taxes and delivery charges to final destination.
3. The incoterm that best describes total seller responsibility is DDP. Delivered Duty Paid.
4. P101 Damaged pump steps:
   - ✓ Take a picture of the pump while in the truck
   - ✓ Determine whether to unload
   - ✓ Mark "Damaged" on the bill of lading as well as the packing list
   - ✓ Initiate and finalize damage claim with carrier

DIPLOMADO SOBRE GERENCIA DE PROYECTOS
ICA - DECFI, UNAM

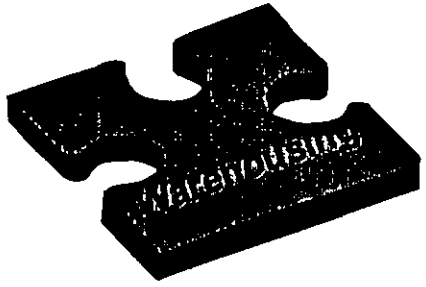
Módulo III "Suministros"
Del 21 al 23 de mayo.

Warehousing

Palacio de Minería
1998.

P101
MODULE ELEVEN

Warehousing



MODULE 11
Warehousing

Purpose: To outline the responsibilities of warehousing.

A. Receiving
B. Checking
C. Storing
D. Protecting
E. Issuing
F. Reporting
G. Maintaining Records
H. Module Review Exercise

A. Receiving

That function of a warehouse organization that initially receives all materials, equipment, tools, and supplies onto a project. Receiving then directs these items to the location where they will be checked, stored and/or used. This ensures that they are properly unloaded and in the quantity and condition described on the delivery documents.

The warehouse should be the first stop for everything coming onto the project. All equipment, materials, tools, and supplies should be routed through the warehouse receiving section so that each shipment can be duly recorded and directed to where it should go. This not only includes materials and equipment that will be off loaded at the warehouse but also supplies for the office, rental equipment, tools, shipments for contractors, etc.

What are the benefits of the Receiving function?

- CONTROL
- QUANTITY / QUALITY CHECK
- RECORD
- FIRST STOP FOR EVERYTHING
- SHORTAGE, DAMAGE
- STORAGE LOCATION

B. Checking

The act of counting and inspecting the materials, equipment, tools and supplies received on a project. Checking ensures that all items are as ordered per the purchase order, and are in the condition and quantity described in the shippers documents.

Always verify the following:

- ✓ Discrepancies
- ✓ Documents
- ✓ Holding Area
- ✓ Double Check
- ✓ Assistance
- ✓ O S & D Report

C. Storing

The placing of materials not yet required by the project in a designated storage location where they can be easily located and identified at a later date.

The following are key factors when storing

- ✓ Security
- ✓ Space Restrictions - limited laydown
- ✓ Maintenance - rotating equipment
- ✓ Climate Control
- ✓ Accessibility

STORAGE LEVELS

- Level A: Dust free and humidity controlled environment
- Level B: Inside, temperature controlled storage
- Level C: Inside storage with protection from rain, snow etc. but does not require heat
- Level D: Outside storage, gravel covered with good drainage

D. Protecting

The safeguarding of stored materials, equipment, tools and supplies so as to protect them from damage, theft and misuse until they are required by construction personnel.

The following items should be considered in regards to protection:

- ✓ Creativity
- ✓ Protect Openings
- ✓ Common Sense
- ✓ Maintenance

E. Issuing

The act of transferring materials, equipment, tools and supplies from the warehouse to construction contractors or Client designated personnel.

The following are key factors related to issuing:

- Work Packages/Work Breakdown Structures
  Contract Obligations
  Bill of Materials by Subcontractor or Work Package
  Scheduling of Issue Dates Based Upon Mobilization Dates
- Warehouse Manpower and Equipment Availability

F. Reporting

roviding information in hard copy and / or via computer concerning the eceipt, issue, condition, status, and other activities of the materials, quipment, tools and supplies handled by the warehouse.

eports are issued to:

- Project Management
- Cost and Scheduling
- Superintendents
- Accounting
- Subcontractors
- Procurement

G. Maintaining Records

The recording of detailed information concerning the activities of the materials, equipment, tools, and supplies handled by the warehouse.

Including but not limited to:

- A complete history of material requirements
- Average purchase costs for all items
- Complete supplier listing

H. Module Review Exercise

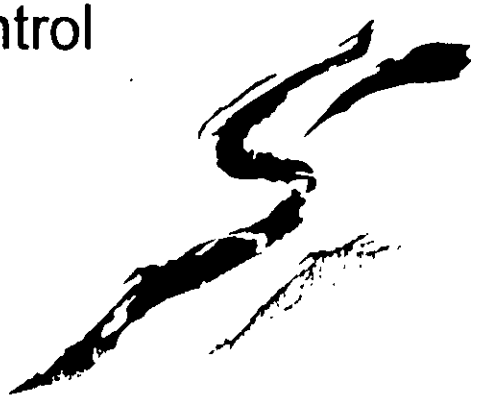
The 10 chilled water pumps (P101 through P110) are at the warehouse and ready for receipt.

Use the following criteria and discuss:

- Disposition of damaged pump P101 identified in the previous Traffic Module
- All other pumps seem to be okay

Questions:

1. What happens to pump P101 while the damage claim is proceeding?
2. What are the steps to receive all pumps?
3. How does receiving affect payment of the pumps?
4. How important is the warehouse to the material control efforts?



H. Module Review Exercise

Answers

1. Damaged pump P101 is set aside with a "Hold / Damage" tag on it until repair is resolved.
2. Steps to receiving pumps:
   - Pull purchase order and compare packing list for conformity
   - Prepare field receiving report "FRR" for all pumps and one overage, shortage, damage "OS&D" report for P101
   - Store pumps in designated location until ready for use (maintenance may be required on the pumps if storage is for a long period of time)
3. The "FRR" is Fluor Daniel's official document that supports payments. It documents that material has been received and describes its condition. Thus, one FRR is issued for all pumps and an OS&D noted on P101. Payment can proceed on all pumps but P101 which is pending OS&D resolution which states repair or replacement. If the OS&D is dispositioned, "carrier charge" then payment is made to the pump supplier.
4. The warehouse and its staff are the key focus for material control. They receive maintain and issue "all" material.

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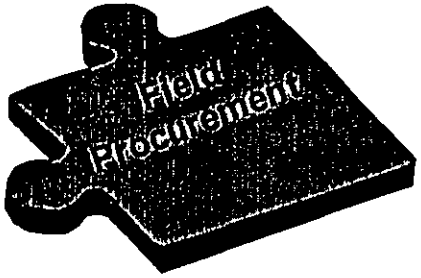
Field Procurement

Palacio de Minería
1998.

P101
MODULE TWELVE

Field Procurement



MODULE 12
Field Procurement

Purpose: To outline the responsibilities of field procurement with an emphasis on:

A. Purchasing in the Field
B. Planning for Field Procurement
C. Challenges in the Field
D. Module Review Exercise

8

A. Purchasing in the Field

What is Field Procurement?

It is a way of procuring goods and services at the jobsite close to both construction needs and local suppliers.

When does Field Procurement start?

It depends on what type of project:

- EPC Procurement begins in the home office, transfers to the field and completes.
- EPCM Procurement begins in the home office, transfers to the field and completes.
- C
  1. Procurement begins in the home office of another design engineering firm, transfers to the field and completes.
  2. Procurement begins in the field at the time of construction.

What is the normal scope of field procurement?

Normally, scope includes bulks, wrap up of engineered equipment and instrumentation.

Is field purchasing always "emergency" buying?

No. "Emergency" buying costs money and the culture of "buying fast" should be "buying smart" which requires proper planning to reduce cost. If "buying smart" is implemented, then true emergencies (i.e. shut downs etc.) can be addressed at the time of occurrence.

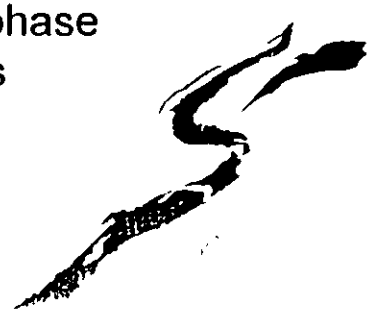
Is everything purchased with a purchase order?

No. Petty cash is available for small purchases and same day pick up. (refer to Procurement Practices)

B. Planning for Field Procurement

In the taskforce / home office environment, planning for the purchase of construction materials should begin early. (refer to Module 1)

- EPC
  - Determine strategy for what is to be purchased early
  - Determine engineering support for material take offs
  - Establish local blanket orders prior to relocating to the field
  - Take advantage of the contractual Fluor Daniel key supplier agreements
  - Prepare for receipt of material
  - Implement "just in time" ordering and receiving
- EPCM
  - Same steps as above except determine what will be purchased by Fluor Daniel and what will be purchased by contractors
  - Complete a Material Responsibility Matrix for each contract package
  - Determine if handling of material in the field will be by contractor or Fluor Daniel
- Construction
  - Option 1 Same steps as EPC if able to participate in the "other than FD" engineering firm's early phases
  - Option 2 Begin with Module 1 and prepare for purchasing in the field
    - Use Modules 2 - 12 as a guideline for all aspects of the construction phase
      - Factors to consider: Less time to establish effective blanket orders
        - Shorter schedule to obtain materials
        - Material more costly due to short lead times (stocking fees)
        - Greater levels of surplus



C. Challenges in the Field

Understand the construction schedule:
Always be aware of construction needs and strive to support them.
Build relationships with local suppliers:
The local suppliers are the only support during critical times.
Familiarize yourself with sources of supply that are readily available:
If local suppliers cannot provide, you must be prepared to locate material elsewhere.
Familiarize yourself with material types to obtain equals and partials:
Your level of material understanding needs to be high to support the use of substitutes.
Communicate with construction, suppliers and the client:
Communication skills are a must to keep all parties informed.
Material control:
Warehousing should alert material control when material levels are low and issue the material required per the bill of material.
Issue material to contractors in the order construction is sequenced:
Contractors are notorious for re-sequencing their work which exhausts materials on hand.
Teamwork:
Teamwork is essential by all parties and members of the field construction staff.

D. Module Review Exercise

Construction is ready to install the ten chilled water pumps P101 through P110.

Use the following criteria and discuss:

- The bill of material has been issued to the warehouse and they are pulling all material requested for installation.
- The warehouse identifies that some material is outstanding, thus a potential schedule delay could ensue.
- In addition to outstanding material, it has been identified that some material is short

Questions:

1. Who issues the bill of material (BOM) or field material request (FMR) form?
2. What are the steps required to satisfy outstanding or short materials?

D. Module Review Exercise

Answers

1. The BOM or FMR is issued by the field engineer / area superintendent per drawing in construction installation sequence. This person authorizes these forms if material is requested by a contractor. The warehouse pulls the material and prepares it for pick up or delivery to the work site. It is the superintendent's responsibility in the case of a contractor requesting material that supports the construction sequence.
2. Steps required to satisfy outstanding or short material:

   Construction notifies the field engineer

   Short:
   - Field engineer issues requisition for short material
   - Purchasing buys the material
   - Material is delivered
   - Warehouse informs construction of material availability and issues

   Outstanding:
   - Field engineer notifies expediter
   - Expediter contacts supplier and establishes delivery intentions or work around plan