



Schedule Development & Control Procedure

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1.0 PURPOSE

The intent of this procedure is to provide guidelines that shall be used for the preparation of all schedules during all phases of the project. The amount of detail in each schedule will be based on the information available during the specific phase of project.

The key objectives include:

- Provide minimum requirements for development of detailed schedules
- Establishing baseline schedules
- Prepare and maintain progress and performance data against the baseline
- Prepare and maintain resource curves (manpower and quantities) against the baseline
- Evaluate schedule performance and identify accurate forecast for the remaining work
- Prepare schedule analysis and identify critical/near-critical path(s) of the project and mitigation strategy (plan) where and when needed
- Provide early warnings of schedule deviations for key activities and keep management informed of the development of any critical changes
- Rigorously controlling variances to established baselines and targets
- Identify schedule related risk and propose mitigation measures
- Prepare Key Performance Indicators (KPIs)
- Performing what if analyses

1.1 Responsibilities

1.1.1 Contractor Responsibilities

- Contractors shall provide any assistance requested by Owner's planning team to verify the information provided by Contractors.
- Contractors shall develop and issue the Level 3 schedules along with the CKPC Basis of Schedule template CKPCO-GEN-0000-PC-PRO-00006 and all supporting documents as outlined in this procedure.
- Contractors shall issue the roll-up Level 1 and 2 schedules as per this procedure.
- Contractors shall update progress and schedule in accordance to CKPCO-GEN-0000-PC-PRO-00008 Contractor Progress Reporting requirements and CKPCO-GEN-0000-PC-PRO-00009 Reporting Calendar.
- Contractors shall identify and report all schedule deviations from the baseline plan and previous period forecast and provide explanation.

- Contractors shall facilitate regular review meetings prior to submitting schedule and progress reports to Owner.
- Contractors shall inform Owner of any revisions to key logic and durations, critical path and propose mitigation measures in accordance with GC 16.1.2.
- Contractors shall incorporate all Schedule Interface Points (SIP's) in the schedule and to attend all Schedule integration meetings chaired by CKPC Schedule Integration Management team.

2.0 BASELINE PREPARATION AND/CHANGES & RECONCILIATION

Upon approval of schedule and the basis of schedule document, this will be set and control schedule baseline. Contractor shall report any changes and variances against the baseline schedule and explain reasons.

During execution of project Owner and Contractor may agree to have interim baselines i.e. before start of construction however the original baseline will always remain as contractual reference. Any changes to the original baseline schedule shall be reviewed and approved by Owner.

3.0 PROCEDURE

3.1 Scheduling hierarchy

Development of detailed integrated schedule in large projects is extremely complex. Due to this complexity, various levels of schedule hierarchy are required for adequate communication and control. A typical schedule level hierarchy includes:

0	Program Master Plan, by Owner
1	Level 1, project summary & milestone schedule
2	Level 2, roll-up schedule
3	Level 3, Work Schedule
4	Level 4, document list and schedule, field daily work schedule (FIWP), sub-Contractor's schedule.

3.1.1 Level 1 Schedule (Project Summary and Milestone Schedule)

The Level 1 schedule should be high level and sufficiently detailed to demonstrate how the Contractor will execute the work within the target dates established by the program milestones. The project Level 1 schedule is typically presented as a one-page Gantt Chart format supported by a milestone table which provides an overview of the complete project. This schedule includes key contractual project milestones and the main engineering, procurement and construction activities within each Unit. Some of these milestones may have been requested by Owner's as per overall program objectives. It may also show the major deliverables required for the project to be completed.

This schedule should be developed at the start of the project and will be updated and issued as described in CKPC-GEN-0000-PC-PRO-00008 Contractor Progress Reporting, to reflect the status of the project. The baseline activities and / or milestones cannot be moved without the prior approval by Owner.

Once the detailed Level 3 work schedule is prepared, the Level 1 schedule should be a rollup of the project detailed activities (in P6). The Level 1 schedule should also include pre-commissioning, commissioning and start-up activities to demonstrate how the Contractor expects those phases of the project to be executed.

3.1.2 Level 2 Schedule (Summary Execution Schedule)

The Level 2 schedule shows all major milestones, all (OSBL) interface milestones (Provider and Receiver), key reviews (Hazop/P&IDs/Model reviews, etc.), Key engineering/Procurement/Module fabrication/Construction activities organized by main WBS sub-areas and then disciplines.

The Level 2 schedule shall not be collapsed activities. All activities in Level 2 schedule must be either independent task, WBS summary or Level of Effort with activity ID so that all Level 2 activities can be filtered from the Level 3 Work Schedule and organized by corresponding activity code, please see CKPCO-GEN-0000-PC-PRO-00007 Scheduling ID and Coding Dictionary for more detail. The layout and format of the Level 2 schedule shall be proposed by Contractor and agreed by Owner planning team.

An updated Level 2 schedule will also be issued by Contractor along with the Level 3 Work Schedule as per CKPCO-GEN-0000-PC-PRO-00008 Contractor Progress Reporting and CKPCO-GEN-0000-PC-PRO-00009 Reporting Calendar.

3.1.3 Level 3 Work Schedule (detailed Integrated and resource loaded Schedule)

The Level 3 Work Schedule is used for the integration of Contractor scope of work (ISBL) with other Contractors (OSBL). Please refer to CKPCO-GEN-0000-PC-PRO-00005 Schedule Integration Management for more detail.

The Level 3 Work Schedule is in the form of detailed precedence Critical Path Method (CPM) and is usually starts with Level 1, 2 & 3 project WBS and then further organized by more detail as needed. Please see CKPCO-GEN-0000-PR-LST-00001 CKPC Project Work Breakdown Structure for more detail. This is the level of schedule detail that establishes the project baseline that will be set as a target against which Contractors will compare all subsequent reports.

The Level 3 Work Schedule must be resource loaded with engineering hours, Direct Field Labor (DFL) hours and Quantities which will be used for preparation of all commodity curves, manpower histograms and progress curves.

The Level 3 Work Schedule shall be updated as per CKPCO-GEN-0000-PC-PRO-00008 Contractor Progress Reporting and CKPCO-GEN-0000-PC-PRO-00009 Reporting Calendar. The construction and commissioning / start-up work must be fully integrated with the engineering and procurement deliverables such as engineering IFC/EWPs, equipment and material deliveries. The Level 3 Work Schedule must include all EWPs and CWPs.

The Level 3 shall also include a forward logic driven Schedule Integration Point (SIP) milestones. These milestones will then be constrained (No Later Than) as required by Receiver party. Please refer to CKPCO-GEN-0000-PC-PRO-00005 Schedule Integration Management for more detail.

All activity coding, resource coding and resource ID numbering used in Level 3 Work Schedule must be as per Owner specification or approved by Owner. Please refer to CKPCO-GEN-0000-PC-PRO-00007 Scheduling ID and Coding Dictionary for more detail on. All engineering, construction DFL and commodities resource curves must be exported from updated P6 schedule based on early and late curves with the mid-point being set as target (plan/forecast).

All schedules must be constraint free except for contractual dates, providing SIPs and shall be included in the basis of schedule document prior to approval by Owner. Please see CKPCO-GEN-0000-PC-PRO-00006 Basis of Schedule Template for more detail.

Contractor shall not modify the Activity IDs once the schedule is baselined.

Contractor shall develop and submit the Level 3 Work Schedule within 12 weeks from contract award.

3.2 PROJECT MILESTONES

There are Four types of project milestones:

- Overall program milestones (set by Owner)
- Contractual milestones
- Major execution interim milestones that represent significant achievements of events during execution of the project
- Schedule Integration Points (OSBL interfaces between EPC Contracts)

Project execution milestones may include but not limited to the following:

- Major start and/ or finish dates of the design activities or IFC's
- Major key dates in procurement activities or long lead items (ETA/ROS)
- Major start and/ or finish dates of key module deliveries on site (ETA/ROS)
- Major start and/ or finish dates of key construction activities
- Major interfaces among engineering, procurement and construction
- Start and finish dates of key systems turn over
- Mechanical completion of systems
- Completion of commissioning of systems

3.3 SCHEDULE DEVELOPMENT AND CONTROL PROCESS

Development of project schedules for the program should be focused on a less complex structure with appropriate details to ensure that the schedule is manageable. The scheduling development and updating process defines the responsibility and ownership by all work groups with their focus on achieving the schedule objectives and timely completion of project.

3.3.1 Work Process

The following steps shall be followed in the development of schedules by Contractor:

- Contractor shall develop and submit a schedule development plan (Plan of Plan)
- Owner reviews and approves the schedule development plan
- Owner reviews and monitors the progress on weekly basis during the schedule development phase
- Owner provides information associated with owner activities (if any)
- Contractor shall develop the basis of schedule document as per CKPC0-GEN-0000-PC-PRO-00006 Basis of Schedule Template
- Contractor shall conduct quantitative Schedule Risk Assessment (SRA) to ensure the probability of meeting the schedule meets Owner's need
- Owner reviews and approves the basis of schedule
- Contractor shall present the schedule with all supporting details to Owner
- Contractor shall issue the final revision of schedule incorporating comments from Owner

3.3.2 Schedule Development Plan (Plan for Plan)

Contractor shall prepare a schedule development plan prior to start of schedule development. This plan shall state the purpose, planning / scheduling methods and process utilized, required input from disciplines, resource loading, Schedule Risk Assessment, Schedule integration Points, key interim reviews with Owner etc.

The schedule development plan will clearly state all pertinent qualifications and exclusions at the time the plan is developed and list the key control documents to be used as a basis for the development of the schedule. This schedule is to be prepared within fourteen (14) days after NTP as part of the 90-day Detailed Look Ahead schedule referenced in section 3.8.1.

3.3.3 Interactive Planning Workshops

Prior to development of the detailed schedule, Contractor shall facilitate a joint interactive planning sessions / workshops with all stakeholders. During these sessions all aspects of execution will be discussed

and debated to support project execution and contractual milestones. Owner SMEs must be invited in these sessions.

The result of interactive planning sessions shall be recorded as a document and used as a basis for development of the detailed schedule.

3.3.4 Primavera Schedule Breakdown Structure (SBS)

The project work scope is broken down into discrete, measurable elements each with an assigned responsibility and or budget. Schedule Breakdown Structures (SBS) provides a means for organizing activities and breaking a project schedule down into sub-divisions and components at successively lower levels in an orderly manner to establish a system for coding and reporting. The SBS should be aligned with the Level 1, 2 & 3 project WBS and then be further organized by disciplines or CWP's and the path of construction as needed.

Contractor shall issue to Owner the propose SBS structure prior to development of schedule.

3.3.5 Scheduling Tools

Contractors shall use Primavera P6 V16.2 or higher for the development of their schedules.

3.4 Program Schedule Integration

All schedule interfaces between different contracts will be managed via Owner Schedule Integration Management Procedure.

Contractor shall incorporate all Provider and Receiver Schedule Integration Points (SIP's) in the Level 3 Work Schedule in a dedicated SBS. For more details on schedule integration, please refer to CKPCO-GEN-0000-PC-PRO-00005 Schedule Integration Management Procedure.

3.5 Basis and requirements of Schedule

The purpose for this section is to establish the minimum requirements and to provide definitions with respect to the schedule development and control.

3.5.1 Activity IDs and Coding Structure

Contractor shall strictly adhere to Owner's activity IDs and coding which is provided in the CKPCO-GEN-0000-PC-PRO-00007 Scheduling ID and Coding Dictionary. These codes shall be established as global code in P6 database. Contractors may use additional codes in project codes only.

3.5.2 Resource IDs

Resources IDs (labor and non-labor) are provided by CKPCO-GEN-0000-PC-PRO-00007 Scheduling ID and Coding Dictionary.

Contractor shall use Owner's resource ID's for resource loading in all schedules.

3.5.3 Resource Codes

Resources code (labor and non-labor) are provided by CKPCO-GEN-0000-PC-PRO-00007 Scheduling ID and Coding Dictionary.

Contractor shall use Owner's resource code for activities that are resource loaded in all schedules.

3.5.4 Basis of Schedule Document

Upon submission of any schedule, Contractor shall submit a document that outlines the basis and assumptions and all other information that was used in development of the schedule. Contractors shall use CKPCO-GEN-0000-PC-PRO-00006 Basis of Schedule Template for development of their basis and assumptions document where applicable to Contract.

The content of this document shall include but not be limited to the following:

- Project key milestones with clear description/definition in a summary table
- Basis of duration for the key activities
- All Calendars used in P6 (H.O. engineering, procurement, fabrication, construction, pre-commissioning, others)
- Basis of constraint dates (if any)
- A summary table indicating budgeted quantities and engineering man-hour, construction DFL and IFL man-hours aligned with the baseline cost estimate
- Basis of progress measurement and rules of credit (E/P/M/C)
- All key design/ engineering reviews with Owner (engineering reviews, construction gate reviews, etc.).
- Procurement and logistics strategies.
- Procurement cycles (pre-award and post award activities) and lead time for Long lead and non-long lead items.
- Basis of all major key logics and lags between activities in engineering, design, procurement, fabrication, construction, pre-commissioning and commissioning.
- Construction contracting and execution strategy including constructability, heavy lifting, modularization strategy including all supporting drawings and layouts.
- Path of construction.
- Critical and near critical path(s) schedule, including the total float criteria.
- Seasonal considerations described (i.e. road ban, winter work etc.).
- Progress S-Curves (early plan/forecast, late plan/forecast, actual).
- Manpower histograms (direct and indirect).

- Quantities curves (early plan/forecast, late plan/forecast, actual).
- Construction manpower density analysis (for each sub-area).
- Schedule float density analysis.
- Risks/ Mitigations/ Opportunities.
- Exclusions

Contractor shall submit the basis of schedule document along with the schedule for Owner review and approval prior to be set as baseline. Any changes from the approved schedule baseline shall be monitored and approved as per Schedule A.

3.5.5 Other Requirements

Some of the other requirements for the detailed Level 3 Work Schedule shall include but not be limited to following:

- The engineering schedule must include all engineering deliverables including all interim and final issuance of documents i.e. IFR, IFH, IFD as an independent task.
- All reviews and approval must be shown as task and NOT lag.
- The Contractor's progress measurement system and detailed schedule must be completely aligned. This means that the key interim steps in progress measurement must have a corresponding activity in the Level 3 Schedule.
- The resource loading for quantities, engineering and construction DFL hours must be done on activities and not level of efforts or WBS summary.
- All activities must be resource loaded and updated at the activity level in accordance with the agreed rules of credit.
- The Contractor will need to create a resource curve based on early and late dates for each resource to provide an envelope (banana curve). A mid curve at 50% distance from both curves should be used as baseline and will be compared against the actual during the execution of the project.
- Global construction calendars will be reviewed and agreed by Owner.

The submitted schedules shall comply with the following as a minimum:

- No loops
- No excessive or negative lag
- No open-ended activities
- No negative float
- Activities must have a manageable duration and budget. Activities with too long duration or large budget must be broken up into more manageable activities.

- No false or unnecessary relationships
- SF relationships without explanation are not allowed.
- Activities having FF relationship shall also have a SS relationship with the same activity to eliminate unintended float
- No constraints are allowed unless for providing SIPs, contractual milestones and need to be approved with Owner
- Please see Appendix B, in this document, Owner schedule completeness checklist for more detail.

3.6 Formal Schedule Reviews

CKPC requires two formal schedule reviews with Contractors as per Appendix A, in this document, Review Process Work Flow Diagram upon formal submission of schedule (IFR). The first formal review will be detailed reviews with discipline leads and planning team and this may take up to three full days. All Contractor internal reviews or interim reviews with Owner project controls team must occur prior to this review.

The second formal review will be for verifying the actions during the first review and the overall Level 2 summary schedule.

Contractor must complete a self-assessment of schedule as per Owner checklist upon submission of schedule. Please see Appendix B, in this document, for Owner Schedule Completeness check list.

3.7 Progress and Performance Measurement

3.7.1 Methodology

Performance measurements are necessary for determining the status of project activities and the effort required to reach planned levels of progress. Tracking and comparing measures such as effort expended, progress achieved, and productivity are all essential in forecasting cost and schedule elements of the project.

Once the detailed schedule and the basis of schedule document is approved then it will be set as baseline against which the performance can be measured and reported during execution of the project.

Contractor shall submit the methodology for progress measurement and earned value system for engineering, procurement, off-site fabrication, construction, pre-commissioning activities for Owner's review and approval. All rules of credit must be reviewed and approved by Owner.

The Contractor's project manager in conjunction with the project controls manager, shall determine the extent of performance measurement beyond the minimum requirements of this procedure to be applied to the contract.

3.7.2 Progress Measurement

Contractor earned value system shall be tied to the Contractor's detailed schedule (with corresponding Activity ID) with respect to the budgeted values (deliverables, work hours, or quantities).

3.7.3 Progress and resource Curves

Contractor shall utilize resource loaded schedule (P6) to generate plan/forecast progress and commodity curves by exporting early and late resource distribution from P6.

Contractor shall update and maintain earned value progress in P6 upon submission of xer files to Owner.

The level of activity and/or budget breakdown against which progress measurements will be applied to shall commensurate with the project scope, complexity, risk and requirements, and must be agreed with the Owner project management team.

All curves must be at least at discipline level as well as overall engineering, procurement, off-site fabrication, construction and pre-commissioning.

Engineering - Engineering progress will be based on earned values for each group of deliverables. The overall earned progress complete will be calculated based on weighted average applied to each discipline in accordance to the most current approved budgeted hours.

Procurement (Post Award activities) - Overall progress curves will be based on planned fabrication progress and deliveries of equipment and materials. Actual progress will be measured as follow:

- **Mechanical Equipment** - Progress measurement will be based on fabrication milestones for each PO (i.e. First Vendor Data Received, Vendor Drawings Approved, Engineering Released for Fabrication, Last Equipment Receipt and Site Acceptance). Percent complete will be applied against each commitment package weighted average to establish an equipment weighted percent complete.
- **Fabricated Structural Steel** - Structural steel percent complete will be based on tonnage of fabricated steel delivered compared to overall forecast final quantities. Percent progress will be applied against the structural steel supply weighted average to establish weighted percent complete.
- **Bulk Piping Bulks** - Percent complete will be based on total major commodity deliveries i.e. pipe, valves, flanges, fittings compared to forecast final quantities. Percent complete will then be applied to the major piping bulk commodity weighted average to establish weighted percent complete.
- **Bulk Electrical** - Electrical equipment progress to follow the same basis as mechanical equipment above. Bulk electrical material percent complete will be based on total major commodity deliveries i.e. cable, cable trays, EHT, etc. compared to forecasted final quantities. Percent complete will then be applied to the major electrical commodity weighted average to establish weighted percent complete.

- **Bulk Instrumentation** - Percent complete will be based on quantity of control valves, safety relief valves and all other instruments delivered compared to the requirements of the latest revision of the instrument index. Major instrument items such as DCS and Analyzers to follow the same basis as mechanical equipment progress above. Percent complete will then be applied to the major instrument weighted average to establish weighted percent complete.

Off-site Fabrication - Overall progress curves will be based on planned fabrication progress and deliveries of Spools and Modules.

- **Pipe Spool Fabrication**- Field erected pipe spool fabrication progress will be based on diameter inches diameters of fabrication completed compared to forecast requirements. Overall percent complete will be applied to the pipe fabrication weighted average to establish the weighted percent complete.
- **Module Fabrication** - Module yard progress will be based on earned values tied to steel erection, pipe installation, cable tray installation, heat tracing and insulation for each module. Overall earned percent complete will be applied to the modularization weighted average to establish the weighted percent complete.

Construction - Overall progress curves will be based on planned Installed progress for major commodities such as site grading, piling, structured concrete, concrete paving, structural steel, piping, hydrotesting, cable piling, electrical heat tracing, Instrumentation, Insulation, system walkdowns, punching and turn over etc. Actual progress will be measured as follow:

Construction - Site construction progress will be based on earned values tied to installed quantities. All Direct Filed Labor (DFL) hours are to be calculated based on quantities and Rate of Placement (RoP). Overall earned percent complete will be applied to the construction weighted average to establish the weighted percent complete. Construction weighted average will be based on direct field labor hours.

Overall (EPMC)- The basis for overall progress measurements will be the contract value converted to a weighted value for engineering, procurement, module fabrication and construction. Earned percent complete for each element will be applied against weighted average to establish earned weighted values. Weighted averages will not be subject to change unless approved by the Owner's project management team. EPC progress curves will be prepared for each unit by the EPC silo Contractors and for the overall project by the Owner's project management team.

Frequency: The overall progress will be reported based on Owner reporting Calendar.

Progress reports for the engineering, procurement services, module fabrication and construction phase shall be provided as described in CKPCO-GEN-0000-PC-PRO-00008 Contractor Progress Reporting Requirement document. Progress measurements must be verified independently, either on a random or completion verification basis to provide the level of confidence necessary to ensure that the project cost and schedule are in control.

3.7.4 Manpower Histograms

Contractors shall submit Manpower Histograms based on calculated Full Time Equivalent (FTE) for all disciplines as well as overall for Home Office Engineering home and Site Construction. This includes period

plan, actual and rolling forecast FTEs and cumulative manhours (Plan, Actual and rolling Forecast) matching with control budgeted hours, actual and current forecast at completion.

3.8 Other Schedules

The Contractors will produce other detailed schedules that they use to monitor details of their work.

3.8.1 90-Day Look Ahead Schedule

Contractor shall submit a 90-day detailed look ahead schedule that defines what work must be accomplished shortly after project kick-off meeting. The 90-day schedule is to be started and completed during the project planning phase and in absence of the detailed Level 3 Work Schedule.

3.8.2 Look Ahead Schedules (6-Week, 3-Month)

These schedules will be produced from detailed schedules with rolling-date selection criteria. These schedules will provide a focus on the immediate and upcoming work. The schedules may be in either bar chart format or tabular format with resource requirements indicated. See CKPCO-GEN-0000-PC-PRO-00006 Basis of Schedule Template.

3.8.3 Systems Completion and Turnover Schedule

Contractor shall prepare and submit to Owner a system turnover schedule and skyline when the bulk construction is approximately seventy percent complete, but no later than sixty days prior to the first system turn over forecast to be issued.

As a minimum, Contractor shall include the following detail activities in the schedule for each system:

- Completion of pipe-cleaning and Re-instatement
- Completion of EHT
- Completion of piping insulation
- Filed Walk-down and Punching
- Clearing Punches A's & B's
- EHT zone energization
- Loop Check activities
- Completion & Turn Over Documentation
- System accepted and Mechanically Complete

The Contractor shall provide skylines (planned, forecast, and actual) for cleaning, re-instatement, moto run-in's, EHT completion, Insulation, EHT zone energization and loop check, walk-downs and turn over activities.

Contractor shall provide the status of ITR/Turn-over Commissioning Packages status (by discipline and overall).

3.8.4 Critical and Near Critical Activities

Contractor must submit the critical and near critical path schedule along with the submission of the baseline and schedule updates.

- The criteria for critical path is $0 \leq TF \leq 15$ days
- The criteria for near-critical path is $15 < TF \leq 30$ days

3.8.5 Schedule Integration Points (SIPs) status

Contractor must update and submit the schedule integration milestone report.

3.9 Forecasting

Contractor shall provide accurate forecast for the progress, manpower for the remaining work based on the following:

- The most current updated schedule
- Remaining work to go considering the current performance indicator(s) and recovery plan (when required)

3.10 Schedule Risk Analysis

The Contractor shall conduct a formal schedule risk analysis (Quantitative Risk Analysis) prior to submission of baseline Level 3 Work Schedule.

3.11 Project Controls Audit

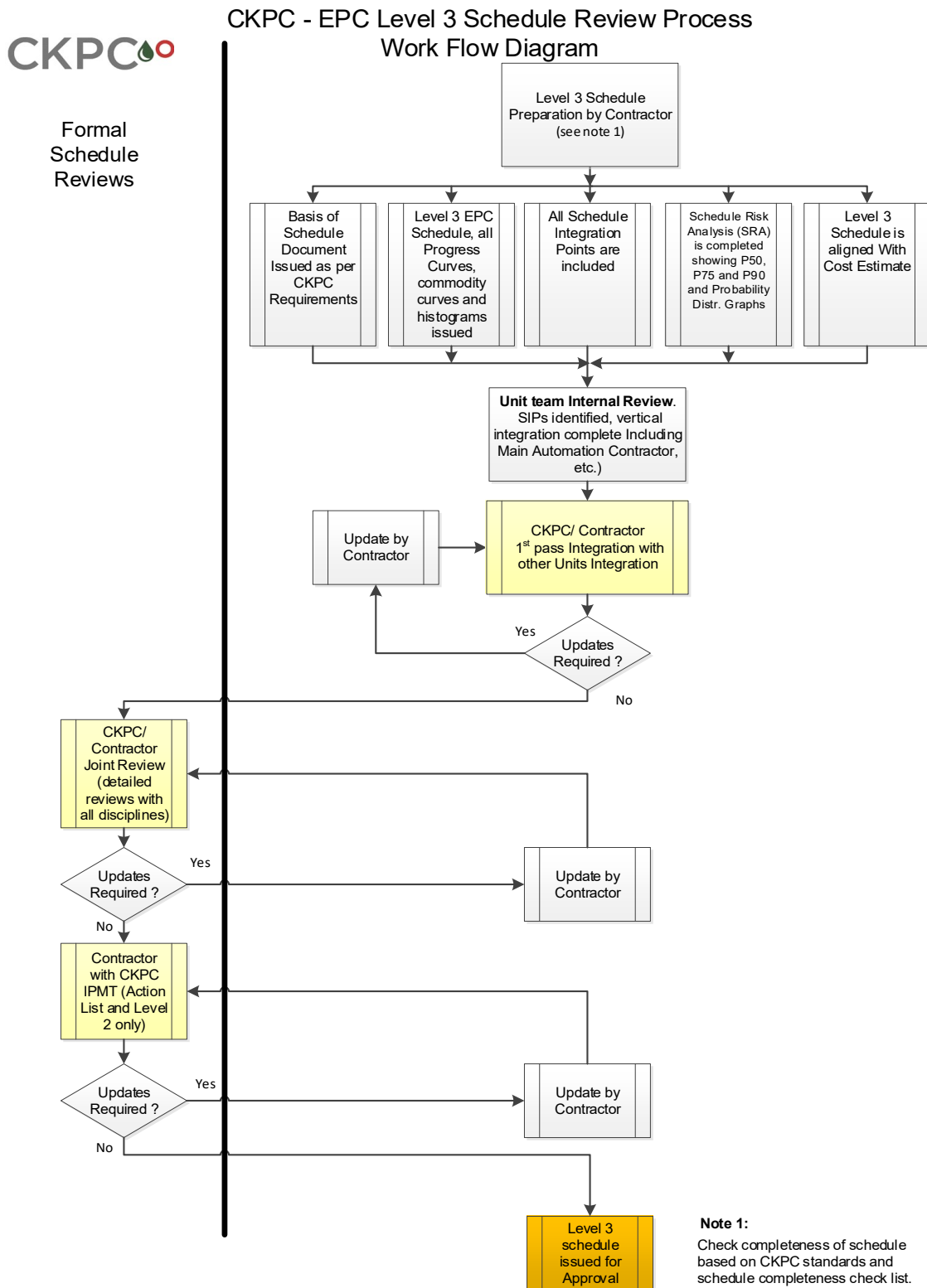
- Owner project controls may conduct periodical audits on the progress and project controls process as needed.
- Contractor shall provide with all necessary documents to demonstrate the reported information are being supported with detailed as agreed with Owner.

4.0 REFERENCES

CKPCO-GEN-0000-PC-LST-00001 Work Breakdown Structure
 CKPCO-GEN-0000-PC-PRO-00004 Schedule Development and Control
 CKPCO-GEN-0000-PC-PRO-00005 Schedule Integration Management
 CKPCO-GEN-0000-PC-PRO-00006 Basis of Schedule Template
 CKPCO-GEN-0000-PC-PRO-00007 Scheduling ID and Coding Dictionary
 CKPCO-GEN-0000-PC-PRO-00008 Contractor Progress Reporting Requirements
 CKPCO-GEN-0000-PC-PRO-00009 Reporting Calendar

5.0 APPENDIX

APPENDIX A: CKPC LEVEL 3 SCHEDULE REVIEW PROCESS WORK FLOW DIAGRAM



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APPENDIX B: SCHEDULE COMPLETENESS CHECK LIST

				Contract:
◆ For complete list of deliverables and requirement, please see Basis of Schedule Template, Schedule Development & Control procedure and Schedule Activity ID and Coding Dictionary				Review Date:
◆ Description				Review & Check
Primavera specifications (as per CKPCO-GEN-0000-PC-PRO-00007 Schedule ID and Coding Dictionary)				Remarks
	Activity Coding Structure	The coding structure is as per Owner Standard	"Enter Yes, No or NA"	
	Activity Coding Assignment	All resource values are populated and assigned to tasks		
	Task Calendars	All calendars are as per Owner Standard (Engineering, Procurement, Construction)		
	Resources Coding Structure	The Resource coding/ID structure is as per Owner Standard		
	Resources Assignment	The resources assignment is completed		
	Resources Calendars	The resource calendars are created		
	Resources Calendars Assignment	The resource calendars are assigned		
	Activity ID Numbering	The activity IDs are as per Owner Standard		
	Schedule Breakdown Structure (SBS)	SBS is attached (as per Owner requirement)		
	No Summary bars or summary dates to be shown	Only LOE or WBS summary used		
	Schedule Report log:			
		No loops		
		No hard constraints unless explained		
		No open ended activities		
	All activities Shall have defined predecessors and successors	No leads or negative lags		
	Leads have adverse effects on the project total float, therefore impeding the ability to determine the true critical path			
	Excessive lags shall be shown as task.	No excessive lags		
		No out-of-sequence activities or milestones		
		No activities containing invalid relationships		
		Critical and Near-critical path(s) are identified and reported.		
		The criteria for critical path is 0≤TF≤15 days		
		The criteria for near-critical path is 15<TF≤30 days		
		Float Density or Schedule compression (FD) ≥ 0.20		
		No high or excessive float		
		No negative float		
		No SF relationships without explanation		
		No false or excessive logic ties		
		Primavera WBS (blue boxes) were used for organizing activities for L1, L2 and L3		
Basis of Schedule Template (as per CKPCO-GEN-0000-PC-PRO-00006)				
CONTRACTOR'S SCOPE OF WORK & EXECUTION PLAN				
	KEY MILESTONES TABLE AND DEFINITIONS	Milestone Table and definitions are included		
	LEVEL 1 SCHEDULE AND ALIGNMENT WITH PROGRAM MASTER PLAN	Level 1 schedule is included and is aligned with Owner Program Master Plan		
	LEVEL 2 SCHEDULE (ROLL-UP from Level III)	Is Level 2 based on Owner template is attached		
	LEVEL 3 WORK SCHEDULE	Is Level 3 based on Owner template is attached		
	Unit WBS	Unit WBS is attached		
	SCHEDULE BREAKDOWN STRUCTURE (SBS)	SBS is attached		
	CODING STRUCTURE	Description of specific activity coding using by contractor is attached(In addition to Owner Coding)		
	RESOURCE CODING	Description of specific resource coding using by contractor is attached(In addition to Owner Coding)		
	SCHEDULE CALENDERS	All calendars that is used for development of schedule are listed		
ASSUMPTIONS				
	GENERAL	All general assumptions are included		
	Key REVIEWS	All key reviews are described and included in the schedule		
	ENGINEERING			
	Process	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked , Interim issues of deliverables are included as per rules of credits, resource loading is completed		
	Mechanical	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked , Interim issues of deliverables are included as per rules of credits, resource loading is completed		
	Piping & Layout	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked , Interim issues of deliverables are included as per rules of credits, resource loading is completed		

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Document Title:
Schedule Development and Control Procedure

Contract: _____ Review Date: _____			
❖ For complete list of deliverables and requirement, please see Basis of Schedule Template, Schedule Development & Control procedure and Schedule Activity ID and Coding Dictionary			
Primavera specifications (as per xxxxxxxxxxxx Schedule ID and Coding Dictionary)			
	Description	Review & Check	Remarks
	3D Model	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked, interim issues of deliverables are included as per rules of credits, resource loading is completed	"Enter Yes, No or NA"
	Civil and structural	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked, interim issues of deliverables are included as per rules of credits, resource loading is completed	
	Buildings and architectural	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked, interim issues of deliverables are included as per rules of credits, resource loading is completed	
	Control system	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked, interim issues of deliverables are included as per rules of credits, resource loading is completed	
	Electrical, heat tracing and telecom	Key assumptions are included, list of deliverables included in the schedule, logics and duration are checked, interim issues of deliverables are included as per rules of credits, resource loading is completed	
	PROCUREMENT		
	Long Lead and Critical Equipment	All Long Lead and Critical Equipment are included in the schedule The detail schedule includes procurement cycle for pre-award and post award activities (ie RFQ, Bidding, T&E, C&A, PO, vendor Dwg Cat1, PO, vendor Dwg Cat2, PO, vendor Dwg Cat3, fabrication, ETA, delivery etc Post delivery activities must be by EWPs	
	Non-Long Lead Equipment	All Non-Critical Equipment are included in the schedule The detail schedule includes procurement cycle for pre-award and post award activities (ie RFQ, Bidding, T&E, C&A, PO, vendor Dwg Cat1, PO, vendor Dwg Cat2, PO, vendor Dwg Cat3, fabrication, ETA, delivery etc Post delivery activities must be by EWPs	
	Bulk Material		
	WORK FACE PLANNING (WFP)	All Workface Planning time period requirements are included in the schedule	
	MODULARIZATION AND OFFSITE FABRICATION		
		Modularization strategy included	
		Module sequencing/priority list attached	
		Module list and key plan are attached	
	TRANSPORTATION & LOGISTICS	All module transportation and logistic plan are described	
	Histograms and curves from primavera	All necessary production histograms and curves are attached	
	CONSTRUCTION		
	Construction Contracting Strategy	construction strategy is described	
	Construction Sequencing and priorities	All construction Sequencing and priorities are identified and included, necessary drawings are attached	
	Productivity	Productivities are explained	
	Site hand over and construction completion plan	All construction site hand over are identified and included	
	Include man hours & quantity table showing all construction prime accounts		
	RESOURCE LOADING, S-CURVES, HISTOGRAMS AND COMMODITY CURVES		
	ENGINEERING MANHOURS/PROGRESS S-CURVES		
	Engineering Deliverable list	List of Deliverables including estimated hours issued and attached	
	Engineering progress S-Curves	All Engineering Progress S-Curves are issued (by Discipline) as per Owner template	
	Engineering Manpower Histograms	All Engineering Histograms are issued (by Discipline) as per Owner template (Discipline and support hours separated)	
	Budgeted Man-hours	Included engineering manhours summary table for all deliverables and discipline and support hours (as per Class III Estimate)	
	Engineering Progress Curves	Are the Early/Late/Mid curves shown on the progress s-curves?	
		overall Engineering progress (mid curve) peaks at:	7% Pick from Drop Down
		What is percentage of the overall Engineering progress (mid-curve) when the 30% model review is completed?	Over 30% Pick from Drop Down
		What is percentage of the overall Engineering progress (mid-curve) when the 60% model review is completed?	Over 50% Pick from Drop Down
		What is percentage of the overall Engineering progress (mid-curve) when the 90% model review is completed?	Over 80% Pick from Drop Down

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Document Title:
Schedule Development and Control Procedure

Contract: _____ Review Date: _____			
❖ For complete list of deliverables and requirement, please see Basis of Schedule Template, Schedule Development & Control procedure and Schedule Activity ID and Coding Dictionary			
Primavera specifications (as per xxxxxxxxxxxx Schedule ID and Coding Dictionary)			
	Description	Review & Check	Remarks
	MODULE AND OFF-SITE FABRICATION	"Enter Yes, No or NA"	
	Module List		
	Module program progress curves and histograms		
	Including pipe rack modules, process modules, equipment modules, etc		
	Module steel fabrication production curve attached		
	Module Spool fabrication production curve attached		
	Module fabrication footprint (count per day) attached		
	Module Transportation (count per day) attached		
	Heavy Haul (count per day) attached		
	Module Setting / Heavy lifting (count per day) attached		
	Off-module steel fabrication production curve attached		
	Off-Module Spool fabrication production curve attached		
	DIRECT FIELD LABOUR AND QUANTITIES		
	Construction progress curves and manpower histograms		
	All quantities and field man-hours are included		
	Progress S-curves and commodity curves are included for all construction commodities listed below :		
	Site work (earth works)		
	U/G piping		
	Piling		
	Foundation and concrete		
	Steel Structure		
	Equipment installation		
	Module installation		
	Buildings		
	Piping installation		
	Hydro-test		
	Electrical (Grounding)		
	Electrical (Cable trays/Conduit)		
	Electrical (Cable Runs and Terminations)		
	Electrical (Electrical Heat Tracing)		
	Instrumentation and controls		
	Protective Coatings		
	Scaffolding		
	Heavy lifting and crane usage		
	Construction equipment usage (ie man lift, 6 packs, etc)		
	Pre-commissioning (if applicable)		
	Commissioning (if applicable)		
	Total Budgeted hours and quantities are as per Class III Estimate		
	overall Construction progress for DFL (mid curve) peaks at:	7% Pick from Drop Down	
	overall Construction progress for DFL (mid curve) during winter (Nov-Mar) peaks at:	5% Pick from Drop Down	
	Labour Density Analysis and report		
	Labour Density Analysis is carried out and the report is included (inside Buildings, other congested places)		
	INDIRECTS		
	All indirect man-hours are included		
	All indirect manpower histograms are included (based on Owner procedure)		
	OTHER CURVES		
	Production curves		
	All production Curves and other curves as per Owner standards are issued showing Discipline EWP releases versus start of installation (per discipline) (Ex Piling EWP releases versus Piling installation curves)		
	P&ID production		
	Steel structure IFC production vs. Fabrication vs. Erection		
	Piping ISOs IFC production vs. Spool fabrication vs. module and/or field erection		
	Production Curves for RFI, RFQ, PO, Vendor data, ETA, installation		
	Overall Engineering, Procurement, Construction S-Curves showing individual and overall (roll up curves)		
	SCHEDULE ANALYSIS		

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Document Title:

Schedule Development and Control Procedure

❖ For complete list of deliverables and requirement, please see Basis of Schedule Template, Schedule Development & Control procedure and Schedule Activity ID and Coding Dictionary		Contract: _____		
		Review Date: _____		
		❖ Description	Review & Check	Remarks
Primavera specifications (as per xxxxxxxxxxxx Schedule ID and Coding Dictionary)			"Enter Yes, No or NA"	
	8.1 HARD CONSTRAINTS	All constraints have been listed and explained		
	8.2 SCHEDULE OPTIMIZATION / LEVELLING	schedule optimization and leveling is completed		
CRITICAL AND NEAR-CRITICAL PATH		Critical and near-critical path is included Described by Contractor		
	illustrate critical path(s)	Using TF=<15 days for engineering and TF=<30 for construction		
	Describe near critical activities	Using 15<TF<30 days for engineering and 30<TF<60 days for construction		
	Attach critical/near critical path report	Critical and near critical path report form primavera(as per template)is attached		
	critical and near critical path associated risks and opportunities	Critical and near critical path associated risks and opportunities is attached		
RISK, CONCERNS AND OPPORTUNITIES				
	RISKS ANALYSIS, REPORT, RISK LOG, PROPOSED MITIGATIONS	Formal Risk assessment (quantitative) is carried out, report is attached, with P50, P75 & P90		
	OTHER CONCERNS	other concerns are identified		
	OPPORTUNITIES	Opportunities are identified		
PROGRESS MEASUREMENT SYSTEM, RULES OF CREDIT		Contractor's Progress measurement system explained, Rules of Credit for all engineering, procurement, fabrication and construction activities are attached E,P,F & C progress roll-up is established		
TOOLS		Primavera version 16.2 or higher used XER and all native files issued		
EXCLUSIONS		all Exclusions from Owner standards have been reported		
Schedule integration		All SIP's with all Units including site hand-overs to CSU are identified and included in the schedule and schedule integration is completed		
CSU Integration Milestones are identified and incorporated in the schedule		Detailed Pre-commissioning Schedule by System		
All reference documents and other supporting documents as per "Basis of Schedule Template xx-xx-xx-xx-xx-xx		Module index/key plan (Document no, Revision, Dated)		
		Equipment layout, Building Matrix (Document no, Revision, Dated) etc		
		EWP List and grouping index, All CWA's shown on Plot Plans (Document no, Revision, Dated)		
		Plot Plans for Site Plan, Building Footprints, (Document no, Revision, Dated)		

Signed: _____

Date: _____