

ICC INDIA PRESENTS

A WORKSHOP ON Methodologies of Delay, Disruption and Concurrency Analysis

A comprehensive **3-day** technical workshop designed to equip professionals with practical knowledge and advanced techniques for analyzing delays, disruptions and concurrency in complex projects.

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WORKSHOP ON

METHODOLOGIES OF DELAY, DISRUPTION AND CONCURRENCY ANALYSIS



Delay is a common and often unavoidable occurrence in complex projects. Project delay refers to any event or series of events that extends the planned completion date of the project or key milestones. Delays may arise from multiple sources such as changes in scope, unforeseen site conditions, land acquisition issues, variations, force majeure, resource shortages, design issues, weather impacts or external factors beyond the control of project stakeholders. A delay may be excusable or non-excusable, compensable or non-compensable and may affect one or multiple parties depending on contractual provisions and responsibility.

Disruption and Concurrency Analysis is a structured process used to assess project performance and completion that were affected by disruptive events and overlapping delays. It involves reviewing project records such as baseline and updated schedules, progress reports, site diaries, productivity records, correspondence and change management documents to identify the nature, timing and impact of these events on project execution.

Disruption occurs when planned work is performed less efficiently due to factors such as design changes, excessive variations, restricted access, out-of-sequence work or unforeseen site conditions. This often results in reduced productivity and increased costs. Concurrency arises when two or more independent delay events occur during the same period, potentially involving different parties, making responsibility and entitlement assessments more complex.

Modern project professionals require strong analytical skills and knowledge of accepted disruption and concurrency assessment techniques to determine entitlement to Extension of Time (EOT) and quantify associated costs such as prolongation and / or disruption damages.

OBJECTIVE

- ✓ Establish a logical linked baseline schedule suitable for delay analysis and claims.
- ✓ Identify delay events and determine their cause, timing and responsibility.
- ✓ Differentiate between excusable, non-excusable, compensable and concurrent delays as per contract Agreement responsibility matrix.
- ✓ Analyze how delays affect the Critical Path and project completion / milestone completion using accepted methods.
- ✓ Understand the difference between prospective and retrospective methods.
- ✓ Prepare/Assess concurrency, pacing, mitigation and acceleration effects on timelines.
- ✓ Evaluate entitlement for Extension of Time (EOT) and related prolongation impacts.
- ✓ Industry-accepted techniques with case studies from real projects.
- ✓ Core principle of SCL Protocol and AACE RP 29R-03 / 52R-06.

BENEFITS

- Ability to identify and measure delays affecting milestones and project completion.
- Learn to prepare strong and defensible delay analysis for resolution of Disputes
- Better decision-making by understanding the real reasons for schedule slippage.
- Improve contract management by timely identification of EOT entitlement and mitigation actions.
- Reduce chances of disputes by using clear and accepted delay analysis methods.
- Strengthen skills for claims preparation, review and reporting.
- Learn how to reassess delay impact as project conditions change.
- Establish proper monitoring to control ongoing delays and reduce future risks to project completion.

WORKSHOP ON

METHODOLOGIES OF DELAY, DISRUPTION AND CONCURRENCY ANALYSIS

This workshop will cover the following key activities with practical examples.



1.

Review of Contract and Baseline Schedule

Study of contract time clauses, milestones, EOT provisions and approved baseline programme to set the reference for analysis.

2.

Collection of Project Records

Gather and verify documents such as progress reports, schedules, letters, instructions, drawings, site records and photos for accurate analysis.

3.

Identification of Delay Events, making Chronology & Delay Attribution Tables

Determination of events that affected progress, land acquisition issues, variations, force majeure, design changes, late approvals, site issues, unforeseen conditions, resource problems or external factors along with timing and duration.

4.

Impact on Critical Path and Completion

Check whether delays affected critical activities, used up float or pushed milestone/completion dates.

5.

Selection of Suitable Analysis Method

Apply the appropriate method based on project stage and data availability, such as:

- | | |
|-----------------------------------|--|
| (1) Time Impact Analysis (TIA) | (2) Impacted As-Planned (IAP) |
| (3) As-Planned vs As-Built (APAB) | (4) Window Slice Analysis (WSA) |
| (5) Collapsed As-Built (CAB) | (6) Retrospective Longest Path Analysis (RLPA) |

6.

Assessment of Concurrency and Responsibility

Evaluate overlapping delays, mitigation or acceleration actions and assign responsibility as per Contract.

7.

EOT Entitlement and Reporting

Determine Extension of Time entitlement and prepare clear, logical and defensible findings for contract use or dispute resolution.

8.

Disruption Period Analysis

Identifying and evaluating periods where project productivity was adversely affected by disruptive events and assessing their impact on project performance, schedule and costs.

Note:- It is recommended that the online module on Planning to Billing for Construction Industry should be completed before attending this workshop.

SESSION - 1

- Team Introduction
- Interactive Discussion / Brainstorming / Collaborative Thinking
 - Why EOT determinations by Engineer is always disputed by the Contractor?
 - Was the purpose of EOT to merely provide relief to the Contractor for Engineer's default?
 - Was the purpose of EOT to merely providing time extension without any cost compensation?

TEA BREAK

SESSION - 2

Revising - Fundamentals & Core Concepts

- Key terminologies & definitions
- Conceptual Understanding of SCL's Core Principles
- Conceptual Understanding of AACE's Taxonomy
- Common Challenges and Misinterpretations

LUNCH

SESSION - 3

Selection of Delay Analysis Method

- Cause and Effect vs Effect and Cause approach
- Comparison of Commonly Used Methods
- Interactive Discussion / Brainstorming / Collaborative Thinking
 - Why SCL recommends TIA prospective analysis ?
 - Why AACE's recommends retrospective analysis ?
 - What is contemporaneous delay analysis ?

TEA BREAK

SESSION - 4

Delay Analysis & Baseline Review

- Importance of Baseline Schedule
- Importance of As-Planned critical path
- Importance of As-Built critical path
- Critical Path vs Longest Path
- Critical Path vs Critical Activity (or event)

Session - 1**Impacted As-Planned (IAP)**

- Concept and Principles of the IAP Method
- How IAP method works ?
- Examples and illustrations
- Advantages and Limitations of the method

TEA BREAK**Session - 2****Time Impact Analysis (TIA)**

- Concept and Principles of the TIA Method
- How TIA method works ?
- Examples and illustrations
- Advantages and Limitations of the method

LUNCH**Session - 3****As-Planned vs As-Built (APAB)**

- Concept and Principles of the APAB Method
- How APAB method works ?
- Examples and illustrations
- Advantages and Limitations of the method

TEA BREAK**Session -4****Window Slice Analysis (WSA)
Collapsed As-Built (CAB)
Retrospective Longest Path**

- Concept and Principles of the Methods
- How methods works ?
- Examples and illustrations
- Advantages and Limitations of the methods

SESSION - 1**Concurrency & Disruption Analysis**

- Identification & Treatment

TEA BREAK**SESSION - 2****Primavera P6 for Delay Analysis**

- Usage of Primavera P6 in Delay Analysis
- Extraction of Critical Path and Activity Data
- Common Errors and Best Practices
- Review of Contractor's Delay Analysis

LUNCH**SESSION - 3****Case Studies**

- ROW
- Utility Shifting
- Design Finalization
- Variation Approval

TEA BREAK**SESSION - 4**

- Wrong Industry practices
- Summary of Key Learning Points
- Feedback and Closure

Note:-

- The Speaker will co-relate every topic with real life challenges in EPC environment
- Every session will involve Question / Answer Session on the topics covered.

SPEAKER'S PROFILE

Manish Khilauria, PgMP®

CEO & MD, Protecon BTG | B.E. (Civil), IIT Roorkee



Professional Skills

- Program Management & Controls
- Project Management & Controls
- Planning, Scheduling & Monitoring
- Governance Management & Structuring
- Benefits Management & Analysis
- Stakeholder Management & Analysis
- Dispute Resolution & Analysis
- Risk Management & Analysis
- Qualitative / Quantitative Risk Analysis
- Change Management & Analysis
- Communication Management & Analysis
- Conflict Management & Interpersonal Skills
- Procurement & Tendering Processes
- Contract Negotiation & Administration
- System & Procedures Development
- Quality Management (QA / QC)
- Budget Preparation & Control
- Invoice Preparation / Certification
- Manpower Planning & Analysis
- Manpower Recruitment & Performance Review
- Reporting & Forecasting
- Asset Capitalization
- Program / Project Closeout

Computer Skills

- MS Office
- MS Project
- P3 & Primavera P6
- P6 Analytics
- Oracle Risk Analysis (Pert-Master)
@Risk Software
- Decision Tree Analysis
- SAP-MM & PS Module
- JD Edwards Accounting Software
- PRISM
- Aconex
- Assai
- Documentum
- Primavera Contract Manager

Career Summary

Manish Khilauria, PgMP®, a certified **Program Management Professional** by PMI-USA, possessing over **30+ years of experience** in the field, ranging predominantly across various phases of project execution, with an extra emphasis on **Project Planning, Scheduling, Monitoring, Budgeting, Reporting, Risk Management, Change Management, Invoice Management and Contract Administration**. Thorough understanding of the knowledge areas, processes and skill sets required as per the **PMBOK® Guide, The Standard for Program Management and The Standard for Portfolio Management**.

Manish has been associated with several programs and projects of major national **Infrastructure & Energy Companies** in India and abroad. He has extensive exposure to **Project Controls** and management procedures followed by various internationally renowned companies. Also, he has extensive working experience and expertise in internationally recognised project management software packages, viz. **Primavera P6, MS Project, Project Scheduler 7 and Quantitative Risk Analysis using PERT Master and @Risk Software**.

Manish has wide experience in project implementation methodologies across various phases, such as **Feasibility Studies, FEED, Concept Optimisation, Detailed Engineering, EPCM (Engineering, Procurement, Construction Supervision and Project Management), EPC/LSTK and Project Management Consultancy (PMC)** roles in diverse project sectors.

Manish has held multi-faceted responsibilities, including **Project Management, Contract Administration, Budgeting, Planning, Scheduling, Monitoring, Reporting, and Invoice Certification** processes for a portfolio of projects, right from **Project Initiation to Commissioning/Hand-over**, including **Basic Engineering, Detailed Engineering, Procurement, Construction, Shutdown, and Commissioning** activities, using **MS Project and Primavera Project Planner (P6, 8.2)** as planning and scheduling tools.

Manish is currently involved in multiple arbitration **proceedings** with retired Supreme Court Judges and is providing **expert witness** services for **Claimants and Respondents**.

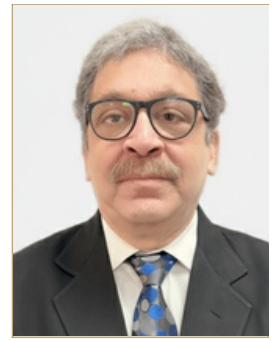
In the past, Manish has worked with companies such as **Engineers India Limited (EIL)** in India, **Petrofac International Limited (PIL)** in the UAE, **Qatar Petroleum (QP)** and **Astad Engineering Consultancy and Project Management (AECPM)** in Qatar, and **Canadian Natural Resources Limited (CNRL)** in Canada.

With his background and experience, Manish plans to share his international experience and knowledge through the training and development of fresh graduates and professionals, especially in the field of **Project Management & Controls**, to help them accomplish the **Art of Project Management**.

SPEAKER'S PROFILE

Arun Zutshi

Director (Contract Management), Protecon BTG | B.E. (Mechanical), MNNIT Allahabad



Professional Skills

- Program / Project Management & Controls
- Profit & Loss Management
- Project Contract Management
- Project Planning, Scheduling & Monitoring
- Project Cost Engineering & Management
- Corporate Planning & Monitoring
- Strategic Visioning & Alignment
- Governance Structuring
- Benefits Management & Analysis
- Stakeholder Management & Analysis
- Dispute Resolution & Analysis
- Risk Management & Analysis
- Qualitative / Quantitative Risk Analysis
- Change Management & Analysis
- Communication Management & Analysis
- Conflict Management & Interpersonal Skills
- Procurement & Tendering Processes
- Contract Negotiation & Administration
- Project Management Systems & Procedures
- Quality Management (QA / QC)
- Budget Preparation & Control
- Invoice Preparation / Certification
- Manpower Planning & Analysis
- Manpower Recruitment & Performance
- Review Reporting & Forecasting
- Asset Capitalization & Project Closeout

Computer Skills

- MS Office(Word/ Excel / PowerPoint)
- MS Project
- P3 & Primavera
- SAP / ERP Platform

Career Summary

Arun is a **Contracts Management Professional** with over **40+ years** of multi-sector EPC **contract** experience and multi-cultural exposure.

Arun has worked with growing organisations focused on continuous development, directing and leading **teams** in a fast-paced, result-oriented environment to achieve overall corporate and business objectives, effectively utilising his professional experience, including **heading** Business Verticals, managing the **P&L (Profit & Loss)** for EPC Project Operations and EPC Project Execution in India and abroad.

Arun has over **40+ years** of rich experience in executive and general management, delivering EPC responsibility for business development, implementation and execution of projects, including **Project Management, Engineering, Supply Chain, Construction and Commissioning**, through multiple project teams at multiple sites in India and abroad.

The responsibilities delivered by Arun include:

- Heading Business Verticals, including acquiring and executing business.
- Business Development, Marketing, Sales, and Proposal Management for EPC/LSTK and Consultancy Services' Contracts.
- Management of **P&L** for EPC Project Operations, including presentations to the Board of Directors.
- Managing the achievement of **top-line and bottom-line** targets for the Business Unit (SBU) by controlling the day-to-day commercials and operations for all projects.
- Formulating strategies to set up and manage complex, matrix-type global project organisations.
- Exposure to **high-technology** environments.
- Project Management, Project Engineering and Project Control of EPC Contracts.
- Turnkey (LSTK) Projects and Consultancy Services' Contracts for both Greenfield and Brownfield Projects.
- Multi-sector expertise, providing a broader vision of industries in India and abroad, including **Refineries, Oil & Gas, Petrochemical Plants, Water & Waste Management, Chemical Industries, Mineral Beneficiation, Power, Steel, Cement, Collieries and Material Handling Plants**.
- Multi-cultural exposure, having worked in or with clients and contractors from **India, France, Germany, Japan, Russia, the USA, the Netherlands, Italy, Korea, Sri Lanka, Iran, South Africa, Zambia, the Middle East and Oman**.
- Managing cross-functional personnel/teams, including Task Forces, for project execution.
- Influencing and motivating stakeholders and employees.
- Implementing quality procedures as per ISO and/or Good Engineering Practices.
- Commitment to, and ensuring, HSE compliance and enforcement.

SPEAKER'S PROFILE

Tejas Patel

Head (Project Controls), Protecon BTG | Petroleum Exploration Engineering, UPES



Professional Skills

- Project Management & Controls
- Planning, Scheduling & Monitoring
- Corporate Planning & Monitoring
- Stakeholder Management & Analysis
- Qualitative / Quantitative Risk Analysis
- Claim Management & Analysis
- Contract Negotiation & Administration
- Procurement & Tendering Processes
- Budget Preparation & Control
- Invoice Preparation / Certification
- Asset Capitalization & Project Closeout

Computer Skills

- MS Office (Word / Excel / PowerPoint)
- P6 Primavera, P6 EPPM & Cloud
- Xpedeon – Budget Management
- Candy – Resource and Productivity
- Oracle – Primavera Risk Analysis (PRA)
- SAP-MM Module
- Aconex, Documentum
- MS Project
- Power BI Analytics

Career Summary

Tejas is a **Project Management and Controls Professional** having **14+ years of experience** in the **Oil & Gas** and **Infrastructure** sectors, predominantly across various phases of project execution, with a focused approach to **Project Planning, Scheduling, Monitoring, Budgeting, Reporting, Risk Management, Change Management, Invoice Preparation/Certification, Corporate Planning and Contract Administration**.

Having been associated with several projects of major national oil companies in India and abroad and with exposure to **Project Controls** and management procedures followed by various internationally renowned companies, he has gained extensive working experience and expertise in internationally recognised computer packages, viz. **Primavera P6, Primavera Risk Analysis, MS Project, Unifier and EPPM**.

Tejas has wide experience in project implementation methodologies across various phases, such as **Feasibility Studies, FEED, Concept Optimisation, Detailed Engineering, EPCM (Engineering, Procurement, Construction Supervision and Project Management), EPC/LSTK and Project Management Consultancy (PMC)** roles.

Being a **Project Management and Controls Professional**, Tejas has held **multi-faceted** responsibilities, including coordination with Engineering and Procurement, Contract Administration, Budgeting, Planning, Scheduling, Monitoring and Reporting for projects, right from **Project Initiation to Commissioning/Hand-over**.

Tejas has participated in various multi-million-dollar contractual claims, negotiations, and **Extension of Time (EOT)** claims involving **Delay Analysis** using **SCL Protocols** and **AACE 29R-03**, as well as cost claims through ADR processes.

In the past, Tejas has worked for organisations such as **Galfar Engineering and Contracting SAOG (Oman), Simon India Ltd. (Delhi), Mobilize Pvt. Ltd. (Delhi) and Naik and Associates Projects Pvt. Ltd. (Gujarat)**.

Details of major projects and experience in managing EPC projects are shared hereafter:

- Delay Analysis for **DFCCIL CTP-14** (ICC Arbitration – Sojitz L&T vs DFCCIL)
- Delay Analysis for **DFCCIL CP-301** Package (currently under Arbitration)
- Delay Analysis for **DFCCIL CP-304** Package (currently under DAB)
- Setting up of **PMO Dashboards** in **Oracle Unifier** for **India's first Bullet Train Project** by **NHSRCL**
- Setting up of **PMO Dashboards** for **Texmaco Rail and Engineering Ltd.** for three railway projects
- EOT Claims for **DND-KMP Expressway**
- **2.3 M BPSD Refinery**, Duqm, Oman
- **0.3 MMTPA LPG Terminal**, Salalah, Oman
- **3.5 MMTPA LPG Terminal**, Mundra by M/s Adani Ports
- Delay Analysis for **FERNAS vs GSPL** arbitration
- Planning/Scheduling Services for **ZADCO's Sewage Treatment Units** at Offshore Platforms
- Planning/Scheduling Services for **ZADCO's Cooling Water Network** at Zirku