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Services

- Typical Projects
- Clients
- Domestic/International Project
 - Locations
- Contact Information

Services

- Conceptual Engineering and Design
- Budgetary Cost Estimates
- Detailed Cost Estimates
- Execution Planning
- Independent Project Reviews
- Feasibility Studies
- Project Management
- Project Management Training
- Construction Management
- Miscellaneous Support

Conceptual Engineering and Design

- Hydraulics and Line Sizings
- Wall Thickness and D/t Calculations
- Design Basis Memorandum's
- Class Locations
- ANSI B31.4, B31.8, API 5L & Associated US and International Codes and Chandrada
 - International Codes and Standards
- Pipeline Route Selection
- Valve Studies

Design Basis Table – Typical DBM Output

Gas and Product Stream Interface Specifications - ALBERTA NGL PLANT CASE

GTP A-B' Pipeline NGL Plant B' - B Pipeline B-C Pipeline Market (ILINOIS) Wax/Min Pressure, psig TBD 2500/TBD Note 9 TBD/1330 1300/TBD TBD/TBD TBD TBD Max/Design/Min Temperature, °F TBD 32/30/28 Note 9 TBD/68/TBD 110/68/TBD 110/68/TBD 120/TBD/TBD TBD Cricondenbar, max psig - 1100 (South) required? required? required? -	
Image: Problem served problem serve	
Max/Design/Min Temperature, °F TBD 32/30/28 Note 9 TBD/68/TBD 110/68/TBD 110/68/TBD 110/68/TBD 120/TBD/TBD Cricondenbar, max psig - 1100 (South) required? required? required? -	
Cricondenbar, max psig-1100 1300 (North) 0Note 3 -required?required?required?required?	
Cricondentherm, max °F Hydrocarbon dewpoint, °F @ psia Water content, max lb/MMSCF-1300 (North) 0Note 3-14?Gross Heating value, Max BTU/SCF Gross Heating value, Min BTU/SCF Note Mark1050+ 9651050+ 9651050+ 9651050+ 9651050+ 9651050+ 9651050+ 9651050+ 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? 9651050+? <td></td>	
Cricondentherm, max ^o F - 0 Note 3 - 14? - - - Hydrocarbon dewpoint, ^o F @ psia TBD TBD - - - 14 Note 1, 5 -5 @ 800 Water content, max lb/MMSCF TBD 0.2 Note 4 TBD - - - 14? Note 1, 5 -5 @ 800 4 Gross Heating value, Max BTU/SCF - - - - - - 4? Note 1, 5 4 4 CO2 content, max mol% TBD 1.5 Note 8 2 2 Note 1 965 965 Note 1 965 N2 content, max mol% TBD 1.5 Note 8 2 2 Note 1 2 3 Inerts, max mol% - TBD TBD TBD TBD TBD 3 5?	
Hydrocarbon dewpoint, °F @ psia Water content, max lb/MMSCFTBD14Note 1, 5-5 @ 800Gross Heating value, Max BTU/SCF Gross Heating value, Min BTU/SCF4?Note 1, 54CO2 content, max mol% N2 content, max mol% 	
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COS content, max ppmy TBD TBD TBD TBD TBD TBD TBD TBD TBD	
Mercaptan content, max ppmv TBD 4? TBD 4 4 4	
Total Sulphur content, max ppmvTBDTBDTBD8 - 328 - 328 - 32	
Other Odorant NO NO NO NO NO NO	
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Conceptual/Budgetary Cost Estimates

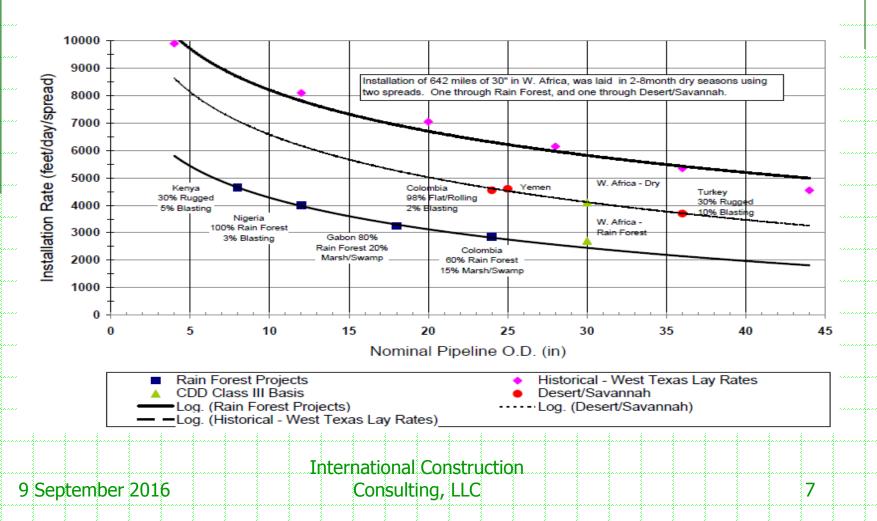
- Complete System Conceptual Estimates, including:
 - Engineering
 - Pipelines, Flowlines, and Gathering Lines
 - Compressor and Pump Stations
 - Production Facilities
 - Infrastructure (incl Roads, Well Pads, etc.)
 - Drilling
 - Field Facilities
 - Tank Farms
 - CAPEX, including Line pipe, Coating, Permanent Materials
 - Offshore Facilities
 - Telecom, SCADA, and CP
 - OPEX

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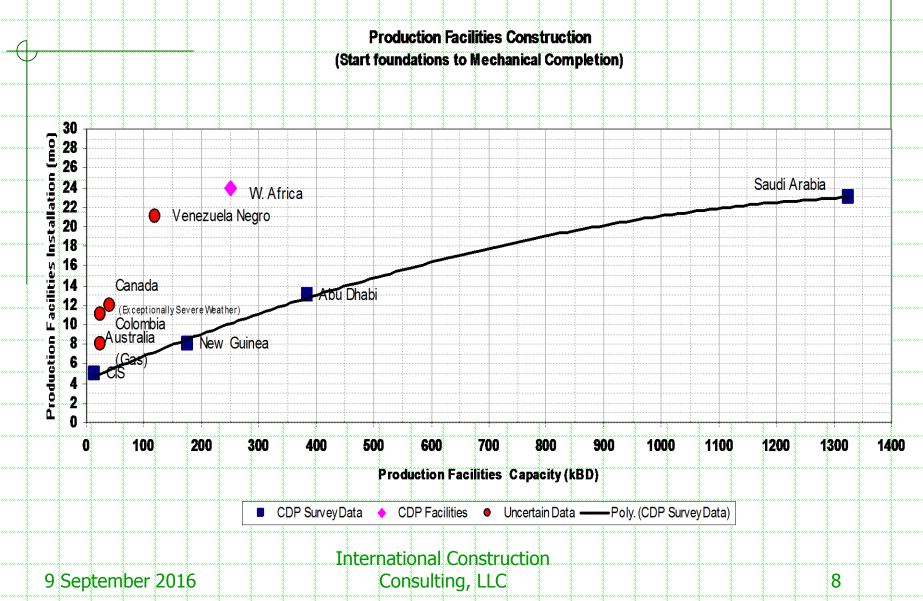
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Conceptual Cost Tools – Typical Output

Pipeline Spread Installation Rates



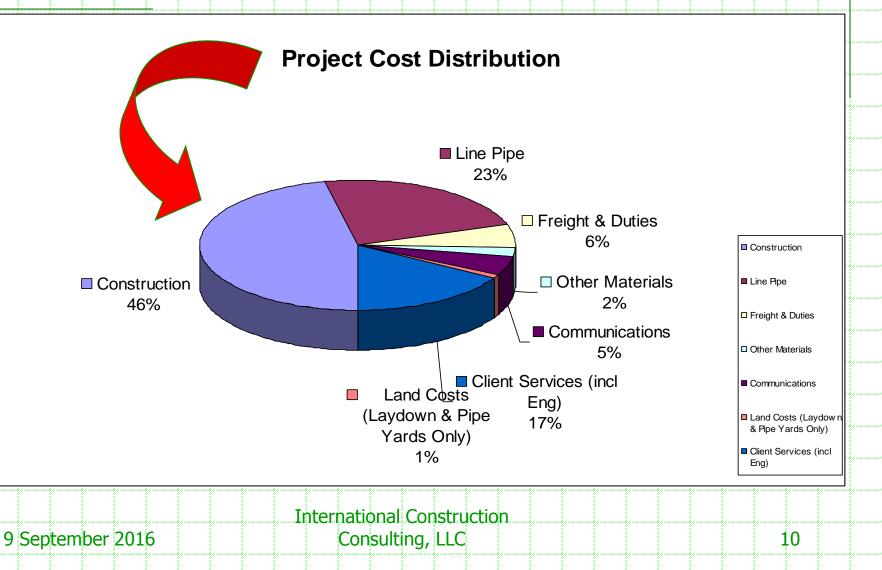
Conceptual Cost Tools – Typical Output



Detailed Cost Estimates

- Labor, Equipment, and Materials
- Mobilization, Freight, Camp Construction
- Construction Management
- Field Support Services
- Detailed Crewing
- Infrastructure Upgrades
- Scheduling
- Manpower Loading

Project Cost Distribution – Typical Estimating Output



Project Schedule – Typical Level 1 Output

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- Execution Planning
 - Project Management Plan (PMP) Development
 - Project Execution Plan (PEP) Development
 - Engineering Management & Execution Plans
 - Preliminary Construction Planning
 - Detailed Construction Execution Plan (CEP)
 - Logistics Planning

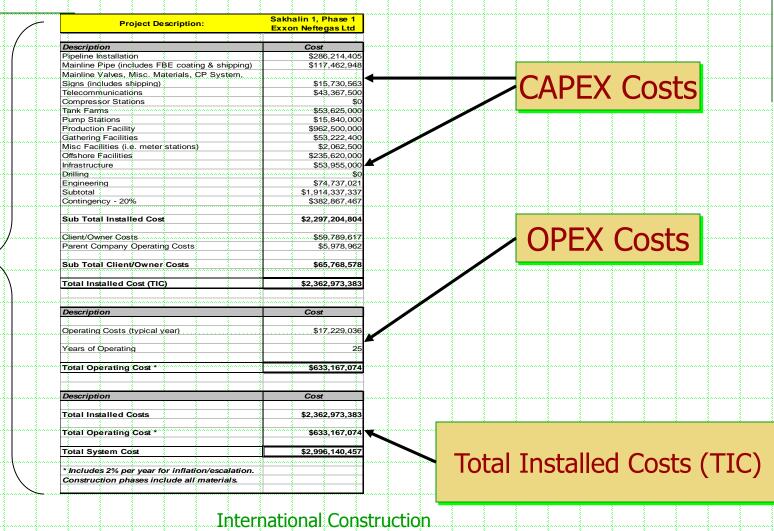
Execution Planning

Construction	FEED		Cont	ract			MC				
Timeline	Det	Detailed Design Construction									
	Contract EPC Award Sub-	Contracts			-						
Construction						Site	DeMob				
Execution Phases	Site Readine	ess Site	Mob	Site Ma	nagement	Offshore Install	H-U/C/T				
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Construction		Coro Com		rt and VP Construc	tion Endorcomont						
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- Independent Project Reviews
 - Risk Assessments & Risk Management Plans
 - Constructability Reviews
 - Construction Readiness Assessments
 - Operations Readiness Assessments

- Feasibility Studies
 - Field Development Planning
 - Conceptual Engineering and Design
 - Conceptual/Budgetary Cost Estimates
 - Strategic Project and Business Planning
 - Risk Assessments (Business, Political, Currency, Market, etc.)

Conceptual Cost Estimates – Typical Overview Structure



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Project Management

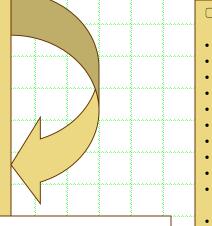
- Contracting Strategy
- Project Management Plan (PMP)
- Project Development and Identification of Key Objectives, Risks and Mitigations
- Staffing and Organizational Development
- Operations Strategy
- Security
- Engineering, Design, and Construction Interface
- Scheduling

Project Management Plan – Typical Excerpts

Description of Deliverables

The following descriptions relate to the deliverables identified on the Project Management Process – Summary. The intent of the descriptions is to broadly

identify the main elements that should be included in each deliverable. Where the deliverable appears in more than one Project Stage (e.g. External Affairs Plan) and is identified by words like *initial*, *update*, *apply*, *manage*, *final*, *etc.*, it is expected that the level of maturation increases as the project progresses. Where the deliverable is named the same from stage to stage (e.g. Independent Project Review) that deliverable applies specifically to the time period of the gate in question, but can build off previous work if warranted. Finally, the team will need to determine when work on a particular deliverable should begin to ensure completion prior to a specific gate.





Project Execution Plan **Project Overview Goals and Philosophies Organization Plan** Appropriations & Funding Plan **Engineering Plans** Value Improving Practices (VIPs) **Construction Plan Contracting and Procurement Plans Interface Management Plans** Project issue resolution, identification of responsibilities Information Management Plan **HSE** Plans • **Risk Management Plan** Regulatory, Permitting, and External . **Organizations plans** Quality Management program Project Controls Plans (cost & schedule) • **Operations Involvement** • **Commissioning and Start-up Plans**

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Project Management – Typical Work Breakdown Structure

	H	W	ORK BRE	AKDOWN ST	FRUCTU	RE			
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· · · · · · · · · · · · · · · · · · ·	Modu	Topsides	Jackets	Flowlines/ Risers	Instrastructure	Power Plant	Compressor Station	Pipelines	Power Transmission Lines
Project Management	COMPANY	<u> </u>	COMPANY		· ·		COMPANY		
FEED	INTEC	AB	B LUMUS GLOB	AL		A	BELUMUS GLOB	AL	
Site Data Collection	N/A		AMEC			AMEC		N/A	N/A
ElA Review	N/A	N/A			[DAMES & MOOR	E		
Route Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	GULF INT	ERSTATE
R.O.W. Acquisition	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	LS (ROW-RC)
Detail Design Equipment & Bulks Procurement Note 2 Construction/Fabrication/		· · · ·	EPC2-LS		,,		EPC1-LS		
Onshore HUC	Lease	N/A	N/A	N/A					
Transport to Site & Installation Offshore HUC			EPC2-LS		N/A	N/A	N/A	N/A	N/A
O & M			MPN		* *	p	EPC1 - LS	* * *	
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Project Management Training

- The purpose is to provide a framework to continuously improve project management capability and performance consistent with business needs by systematic application of best practices that ultimately provide the following:
 - Better execution performance
 - Less variation in results
 - Single point description of management objective and expectations
 - Clarity of organization roles, responsibilities, and interfaces
 - Vehicle for communication, training and achieving project wide alignment
 - Basis for continuous improvement (common work processes, metrics, and lesson learned process).
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Project Management Training

- A proprietary Project Management System is utilized and provides a phased approach whereby as project is broken down into five major phases:
 - Conceptual
 - ◆ FEED
 - Detail Design
 - Execution
 - Start-up and Commissioning

- Construction Management
 - Detailed Construction Execution Planning
 - Logistics
 - Subcontracting Strategy
 - Equipment and Personnel Mobilization
 - Construction Sequencing and Scheduling
 - Engineering and Construction Interfaces
 - Constructability Program
 - Environmental Management Plan (EMP) Review

Construction Management – Typical Plan Overview

Project Overv iew Objectives and Strategies Project ManagementSystem Overview

> **Construction** Execution Overv iew Objectives and Strategies Construction Management Overview

SITE - Work Specific Work Description, Objectives and Strategies, Construction ManagementSystems & Plans (i.e. SH&E Plan,QA/QC Plan, Schedule)

Work Specific / Site Construction Execution Plan

Preliminary Construction Plan

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- Miscellaneous Support
 - Provision of Project or Construction Management Teams, Including Field Inspection
 - Project Specific Construction Specifications
 - Water and Waterbody Crossing Design and Construction
 - Construction
 - Tender Preparation & Evaluation Planning
 - Engineering & Design Review
 - Expert Witness

Tender Evaluation Plan – Typical Plan Overview

					• Pricing _ Lump Sum & Reimbursables
Invitation	Letter				– Options
					– Unit Rates for Changes
Attachme	nt I Instructions to	o Tenderers			Local Content Guarantees, Insurance, Vessel
					Commitments
Attachme	nt II Principal Doci	ument / Exhi	ibits A-J		• Exceptions
			***	••••	•••• Execution Plan
Attachme	nt III Commercial	Tender Forn	n	*****	Management of Local Participation
Attachme	nt IV Technical Te	ndor Form •	****		Project Management Component Specific Information
Attacime			****		Onshore Pipelines
Attachme	nt V Preliminary E	naineerina		••••	Offshore Pipelines
				***	• Export Terminal *••. • Near Term Plans (PCW's, etc)
		Internati	onal Cor	struction	

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Buoyancy Control – Typical Output

International Construction Consulting International Construction Consulting International Construction Consulting International Construction Consulting Concrete International Construction Consulting Concrete International Construction Consulting Concrete International Construction Consulting Description Length (INCHES) Labor Costs Costs Description Length (INCHES) Labor Costs Costs Total Cost Marsh & Wetlands 0 0.00 \$0 \$0 \$0 \$0 Marsh & Wetlands 0 0.00 \$0 \$0 \$0 \$0 Contingency	Exxon Neftegas Ltd Sakhalin 1. EPC2	1				9-May-02 Greg Lamberson	5
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International Construction Consulting, LLC

9 September 2016

26

Recent Projects

- China Gas Pipeline Project
- Alaska Gas Pipeline Producers Project
- Chad Development Project, Chad & Cameroon
- Cuiaba Gas Pipeline, Bolivia & Brazil
- Sakhalin 1, Phase 1, EPC 2, Far East Russia
- EGP3A Offshore Pipeline Project, Nigeria
- > Angola LNG Project, Angola
- Caspian Sea Pipeline Expansion
- Doseo Pipeline Project
- Chad Development Project
- Alpha Crude Connector Project

China Gas Pipeline Project



- 4,830 Km of 40", Gas
 18 Compressor Stations
 Remote Location
- 40 Major River and Canal Crossings
- 300 Km of Congested
 Construction in Shanghai
 Pipeline Crossing of the Great

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Wall

Alaska Gas Pipeline Producers Project





- Gas
 Compressor Stations
 NGL Plant
- **1**5 Major River Crossings
- **D**Remote Location
- **Harsh Environment**
- Largest Gas Pipeline Project in the World

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Chad Development Project



- □ 1,070 Km of 30", Crude Oil
- □ 3 Pump Stations
- □ Field Facilities and Infrastructure
- Remote Location Logistically Challenged



- □ Telecommunications
- World Bank Financed
- Environmentally Challenged
- Multiple Interfaces



Cuiaba Gas Pipeline





G636 Km of 18", Gas

D5 Future Compressor Stations

3 Meter Facilities

D5 Major River Crossings

Environmentally Sensitive

Logistically Challenged
 Bolivia-Brazil Border Crossing

Crossed Worlds Largest Wetland (Pantanal)



Sakhalin 1, Phase 1, EPC 2





- 369 Km of Pipelines (crude, gas injection, and water injection)
 201 Km 24" Crude Export Pipeline
- Marine Terminal
- Tatar Strait Crossing
 Environmentally
 Sensitive
- **D**Logistically challenged



EGP3A OFFSHORE PIPELINE PROJECT





- pipelines, dual 24"predominately swamps
 94 total Km of 24", 20",
 10" offshore pipelines
 Offshore platforms &
 - topsides
- **Hook ups**
- Shore approachSIMOPS integration
- Security challenged



ANGOLA LNG PROJECT





- 1 Onshore LNG process train
- 2 LNG storage tanks
- Marine terminal
- ConocoPhillips Optimized Cascade Process"
- Gas separation & treating
- Condensate stabilization
- LPG fractionation
- Liquefaction & product storage
- 200 kms of 18", 22", and 24" worlds highest pressure gas pipelines installed to date

CASPIAN SEA PIPELINE EXPANSION PROJECT





- Geach 100K M3 Floating Roof Tanks (VRFT)
- Marine terminal expansion and tie-in to offshore pipeline
- Process piping;
- Automated fire protection system;
- Production service support depot;
- Power substations, power supply and equipment room with control room;
- SIMOP's for Commissioning & final tie-ins;

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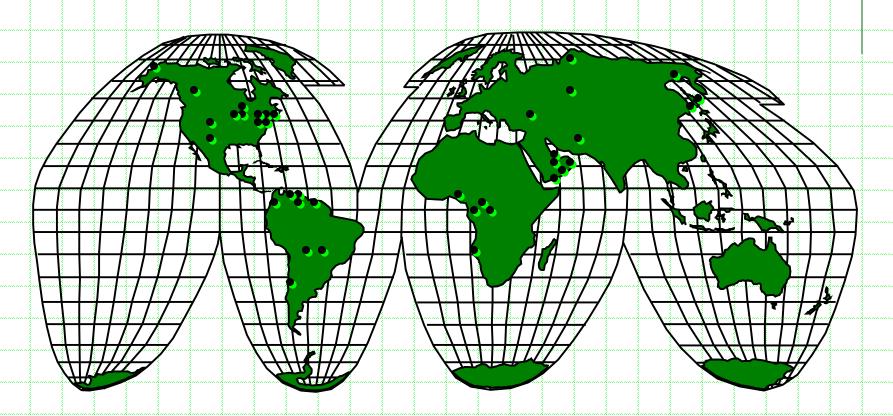
Clients

- AGA Resources
- Alaska Gas Producers
 Pipeline Team (BP; Phillips; and ExxonMobil)
- Alex Stewart International
- Angola LNG Ltd
- Boardwalk Partners
- Boston Strategies
- Branford Castle
- Caracal Energy
- Chevron
- Chevron Neftegas Ltd
- Chevron Nigeria, Ltd
- Comision de Regulacion de Energia y Gas (CREG)

- Confidential Major
 Investment Bank
 - Constructora CAMSA, CA
 - Cumming Company Dueltex Energy
- (Nigeria) Ltd
- ExxonMobil
 - Exxon Neftegas Ltd
 - Frontier Energy, LLC
 - Germer Gertz; LLP
 - Glencore E&P
 - Goldman-Sachs
 - Guidepoint Global Advisors
 - Jahind Projects Limited
- International Construction Consulting, LLC

- K&M Engineering and Consulting, LLC
 - Network Oil & Gas LtdParsons E&C
 - Project Management Resources, Inc
- Select Equity Group
- Shell
 Snelson Companies
- Universal Strategic
 Alliance
- Willbros Engineering
- Willbros International
- Willbros West Africa

International and Domestic Project Locations



9 September 2016

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