

Israel Gas Transmission Project



2	2009-02-06	Issued for Approval	TBL	BRG	FVDS		HAM		
Rev. No.	Date	Description	Prepared	Checked	Approved	Date	Approved		
			Contractor			Company			
  <small>Contractor</small> <small>Company</small>			Document Title Construction Supervision Procedure General						
Company Representative : Mr. Haim Moskowich			Area Code: GEN						
Reference : 155316			Project Identification 60.0710.0000-04-xx		Document-No. IEN-CSE-PRO-0009			Rev. 2	
Purchase Order No. :									
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1 Description of the Project

Israel Natural Gas Lines Ltd/ (hereafter "INGL") are responsible for constructing and operating the Israel Natural Gas Transmission System (hereafter INGLS).

2 Description of the Work

- a. Various pipelines API-5L Grade B, X 42, X 52, X 60, X 65 or X70
- b. Intermediate block valve stations.
- c. Pigging facilities
- d. Installation of Pressure Reducing and Metering Stations (PRMS).
- e. Supply and Installation of Cathodic Protection for above pipelines.
- f. Installation of casing pipes for selected crossings
- g. Laying of conduits for fiber optic cable along the pipeline.
- h. Electrical and Instrumentation work at the stations.
- i. Blowing in of Fiber Optic Cables into the dedicated conduits including splicing and pig tails.

3 Supervision Procedure

3.1 Main Functions- Responsibility

3.1.1 INGL

POSITION

RESPONSIBILITY

Construction Management and supervision

Guidance of the Construction management team below.

3.1.2 Expert Company

<u>POSITION</u>	<u>RESPONSIBILITY</u>
General supervision	<p>Act to support the INGL PM in all technical matters relating to the supervision of pipeline construction.</p> <p>Ensure that all aspects of inspection function efficiently carried out and that the requirements all technical specifications and standards are fulfilled.</p> <p>Maintain that accurate records are provided and ensure that all inspection staff on site is fully aware of the relevant specifications and codes of practice and that they have access to it.</p> <p>Check weld procedure tests and approval process of welders</p> <p>Check radiographs and the results of ultrasonic detection examinations if required.</p> <p>Inspect weld records related to defects found by NDT caused by possible fault in materials, by non-compliance with agreed procedures or to other causes.</p> <p>Inspect and approve the contractor's quality plan.</p> <p>Support INGL in respect of all other techniques as required.</p>

3.1.3 3rd Party Inspection Company

<u>POSITION</u>	<u>RESPONSIBILITY</u>
Inspector	<p>Checking and certifying the welding procedures.</p> <p>Witnessing and certifying the welding procedure tests including the results of the related NDT and destructive testing including: Yield testing, Bending testing, Tensile testing, Macro grinding investigation.</p> <p>Witnessing and certifying of "Pin Braising".</p> <p>Ensure that the approved techniques for taking radiographs and processing radiographic films are maintained.</p> <p>Checking welder certificates.</p> <p>Witness and certifying welder qualification tests.</p> <p>Inspection of the pipe-laying/installation and welding work of the pipeline/stations.</p> <p>Checking and approving the documents of NDT carried out during construction.</p> <p>Checking and approving of pipe book in respect to the installed pipes and other material.</p> <p>Checking and certifying the completeness of the NDT documents.</p> <p>Checking and certifying the bending procedure. Inspecting and approve the bending quality.</p> <p>Checking and certifying the coating procedure. Inspecting and approve the</p>

coating quality.
 Checking and certifying the Lowering in and tie in procedures. Inspecting and approve the lowering in and tie in process.
 Checking and certifying the hydrostatic test procedures.
 Acceptance of the hydrostatic and tightness tests.
 Issue of the provisional Certificate in respect to hydrostatic and tightness test and available safety equipments.
 Issue of final certificate.

3.1.4 Local Supervision Company

<u>POSITION</u>	<u>RESPONSIBILITY</u>
Quantity Survey	Receive approved BOM and BOQ from engineering department. Verify that all relevant specifications are included in the Construction Contract. Confirm by the engineering that the quotations are according to the specifications. Weekly survey of completed quantities, preparing response to Contractor's claims. Pre-negotiation of possible settlements. Support of management in final negotiation.
HSE Supervisor	Supervise all work activities in respect to HSE. Ensure that the HSE requirements are in line with the Israeli Laws and regulations. Inspect and approve the contractor HSE plan.
Quality Assurance	Execution of Quality Control and Quality Assurance Audits. Supervise all work activities in respect to QA/QC. Ensure that the QA/QC requirements are in line with the regulations. Inspect and approve the contractor QA/QC plan.
Document and Stock Control	Receive and maintain all project documentation. Maintain stock lists. Receive and maintain material quality documentation from the suppliers. Ensure that the latest revision of AFC Drawings, specifications and other design documents are available and distributed for the purpose of construction.
Pipeline, Piping & Welding Supervisor	Receive and inspect material. Confirm material compatibility. Maintain quantity and traceability lists. Ensure that welding standards are observed and maintained. Ensure the correct bending in accordance with the relevant standard / procedure. Ensure that all specified requirements on NDT are complied with.

Ensure that all specified welding and mechanical handling standards are observed.

Ensure that welding parameters are maintained according to the specifications and procedure qualifications.

Ensure that all root, fill and cap operations are implemented according to the relevant and approved procedure.

Maintain visual inspection at intermediate and completion stages and, where necessary, request of additional measures.

Ensure that the standards of coating and wrapping are complied with.

Inspect and report on all completed welds as required.

Ensure compliance with all requirements for radiography, including safety procedures.

Keep detailed separate log of individual welder and his results.

Implement the lowering in requirements.

Implement the coating, wrapping, pipe bedding and backfill requirements.

Coating, wrapping, pipe bedding and backfill – Ensure compliance with required standards and report as necessary.

Ensure all pipeline joints, fittings and valves are properly wrapped prior to backfill. Ensure that the required holiday test has been carried out successfully and record each weld and wrap of pipes and fittings individually on daily reports.

Carry out all aspects of painting inspection, Ensure that the requirements of the paint and painting specifications are met.

Maintain records and ensure that the paint/ painting contractor is fully conversant with, and have access to the relevant codes practice and specifications.

Maintain adequate records of paint/ painting.

Check against material schedules and drawings to ensure compliance.

Note final lengths and serial numbers of all pipes as they are welded in line.

Ensure that all pipes are ultrasonically inspected for lamination prior to welding in case a pipe has been cut.

Electrical Supervisor Ensure that all electrical installation works are in accordance with the valid codes and standards.

Cathodic Protection Supervisor Ensure that all cathodic protection installation works are in accordance with the valid codes and standards.

Instrument & Control Supervisor Ensure that all control and instrumentation works are in accordance with the valid codes and standards.

Civil Works Supervisor Ensure that all specified requirements on civil works are complied with.
 Ensure that the required standards for ROW, trenching and backfilling are implemented.
 Check that the reinstatement complies with the relevant compaction and material specification and requirements of the authorities.
 Record irrigation reinstatement details (size, type, location, cover, direction).

3.1.5 Construction Contractor

<u>POSITION</u>	<u>RESPONSIBILITY</u>
QA/QC Manager	Ensure that all aspects of inspection function efficiently carried out and that all technical specifications are complied with. Submit Quality Plan for approval by INGL.

3.1.6 NDT Sub – Contractor

<u>POSITION</u>	<u>RESPONSIBILITY</u>
NDT Operator	Inspect and report on all completed welds as required. Inspect and report on partially completed welds as and when specified. Implement tests for lamination and checks of wall thickness. Report results of all tests. Record and implement MPI (Magnetic Particle Inspection) and interpret the results.
Main Foreman	Responsible for all works and all contractors involved in the project.
HSE Manager	Supervise all work activities; ensure that the safety requirements are complied with. Submit a safety plan for INGL approval.

Document Control Manager Receive and maintain all project documentation.

3.1.7 Other Sub – Contractors

<u>POSITION</u>	<u>RESPONSIBILITY</u>
<u>All Inspectors</u>	Ensure that work will be carried out in accordance with safe practices and ad-



vises immediately of any deviations.

3.2 Responsibility Matrix

Abbreviations:

E = Responsible for execution
S = Supervision
C = Check/Inspection
A = Approval/ Certification

3.2.1 Quality management QA/QC

<u>Activity</u>	<u>Contractor</u>	<u>Local Supervision Company</u>	<u>Expert Company</u>	<u>3rd PARTY</u>
Prepare, plan and agree inspection and test plans.	E	C/A	C/A	C/A
Holding Meetings, carry out Audits and Inspections.	E/S	E	E	E
Material QA/QC	E/C	C/A	C	C

3.2.2 Pipeline Construction

<u>Activity</u>	<u>Contractor</u>	<u>Local Supervision Company</u>	<u>Expert Company</u>	<u>3rd PARTY</u>
Site Mobilization.	E/S	C/A		
Prepare materials lay down areas.	E/S	C		
Receive and stockpile pipe and materials.	E/S	C/A		C
Set out pipeline route and right of way (ROW) .	E/S	C/A		
Set out special crossings.	E/S	C/A	C	
Fence off ROW access and working areas.	E/S	S		
Trial hole to locate services.	E/S	S		
Top soil strip access and working areas	E/S	S		
String out pipe along ROW	E/S	S		
Bending	E/S	C/A	C	C/A
Welding	E/S	C/A	C	C/A
Radiographic examination (NDT)	E/S	C/A	C	C/A
Coating and wrapping	E/S	C/A	C	C/A
Holiday inspection	E/S	C/A	C	C/A
Trenching / ditching operations	E/S	S	C	
Padding	E/S	S		
Lowering in	E/S	C/A	C	C/A
Backfill / land drainage	E/S	S		
Installation of marker posts	E/S	S		



Reinstatement and hand over to Land owner.	E/S	S		
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3.2.3 Station

<u>Activity</u>	<u>Contractor</u>	<u>Local Su- pervision Company</u>	<u>Expert Company</u>	<u>3rd PARTY</u>
Earth work	E/S	S		
Foundation	E/S	S	C	
Walls and fences	E/S	S		
Pipe prefabrication	E/S	C/A	C	C/A
Site piping installation	E/S	C/A	C	C/A
Radiographic examination (NDT)	E/S	C/A	C	C/A
Hydrostatic test	E/S	C/A	S	C/A
Dewatering, Cleaning and Drying	E/S	C/A	S	C/A
Wrapping and coating	E/S	C/A	C	C/A
Holiday test	E/S	C/A	C	C/A
1 st CP Drainage test(prior backfill)	E/S	C/A	C	C/A
Backfilling	E/S	C/A	C	
2 nd CP Drainage test(after backfill)	E/S	C/A	C	C/A
Surface preparation	E/S	S		
Construction of electric pillar	E/S	S		
General electrical installation	E/S	C/A	C/A	
Electrical testing	E/S	C/A	C/A	
Installation of Controls	E/S	C/A	C/A	
Installation of Actuators	E/S	C/A	C/A	
Functioning Test	E/S	C/A	C/A	
Installation of security equipment	E/S	S	S	
Tie in of station	E/S	C/A	C/A	C/A
Reinstatement	E/S	S		
Completion of access road	E/S	S		

3.2.4 Special Crossing

<u>Activity</u>	<u>Contractor</u>	<u>Local Su- pervision Company</u>	<u>Expert Company</u>	<u>3rd PARTY</u>
Fabrication of special crossing	E/S	C/A	C	C/A
Radiographic and UT examination (NDT)	E/S	C/A	C	C/A
Coating and wrapping	E/S	C/A	C	C/A
Holiday inspection	E/S	C/A	C	C/A
Earth works	E/S	S		

Boring / jacking / pulling – in operations	E/S	S		
Padding	E/S	S		
Lowering in / Tie in	E/S	C/A	C	C/A
Backfill / land drainage	E/S	S		
CP drainage test after tightness test	E/S	C/A	C	C/A
Reinstatement and hand over to Land owner	E/S	S		

3.2.5 Hydrostatic testing, gauging and drying

<u>Activity</u>	<u>Contractor</u>	<u>Local Supervision Company</u>	<u>Expert Company</u>	<u>3rd PARTY</u>
Pre test review and audit	E/S	C/A	C/A	C/A
Cleaning	E/S	C/A	C/A	C/A
Filling / dewatering of test sections	E/S	S	C	
Strength test and tightness test	E/S	C/A	C/A	C/A
Gauging	E/S	C/A	C/A	C/A
Drying	E/S	C/A	C/A	C/A
Pre commission and handover	E/S	C/A	C/A	C/A

3.2.6 Cathodic Protection

<u>Activity</u>	<u>Contractor</u>	<u>Local Supervision Company</u>	<u>Expert Company</u>	<u>3rd PARTY</u>
TR / Ground bed installation	E/S	C/A	C/A	
CP posts installation	E/S	S		
CP Drainage Test	E/S	C/A	C/A	C/A
Survey of base line	E/S	C/A	C/A	
Special test posts at crossings and point of interference	E/S	C/A	C/A	
Commission CP system	E/S	C/A	C/A	C
Close Interval Potential Survey and DC voltage gradient (1 year)	E/S	C/A	C/A	

3.2.7 As built Documentation

<u>Activity</u>	<u>Contractor</u>	<u>Local Supervision Company</u>	<u>Expert Company</u>	<u>3rd PARTY</u>
Prepare As built and handover documentation Package.	E/S	C/A	C/A	C/A
Issuance of Completion certificate	E/S	C/A	C/A	C/A

4 Revision Record

Rev. No.	Date	Description	Prepared	Checked	Approved	Date	Approved
			EEN			Company	
1	2008-10-29	IDC	TBL	TBL	FVDS		YDV
2	2009-02-06	Issued for Approval	TBL	BRG	FVDS		HAM