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1.0 INTRODUCTION

Dubai Supply Authority (DUSUP) provides energy supply (Natural Gas) to Emirate of Dubai to meet the needs of electricity generation and water desalination through its pipeline network. Through the production of natural gas (which is processed into gas and condensate products), the purchase of pipeline gas and LNG (and its regasification), gas storage and the operation of the pipeline network, DUSUP plays a key role in the growth and development of Dubai.

DUSUP has assigned Dubai Petroleum Establishment (DPE) the responsibility for operating DUSUP assets and authorised DPE to manage all emergency events occurring on its own operated facilities, pipelines and assets within pipeline corridors in liaison with other governmental entities.

DPE-DUSUP designs operates and maintains DUSUP's onshore pipelines and related facilities to International Standards in order to ensure an uninterrupted flow of gas and other hydrocarbons across Dubai.

There are approximately 700 kilometres of onshore hydrocarbon pipelines operating in Dubai. The gas pipelines operate at high-pressures up to 960-psig and transport highly explosive and flammable natural gas. A number of jet fuel and fuel oil pipelines share the corridors with the gas and condensate pipelines.

2.0 ABOUT NOC

NOC stands for No Objection Certificate. The NOC System is in place in Dubai to review and pre-approve any work in NOC Zone in order to confirm compliance of the Property Developer/Owner, Consultants & Contractor with DUSUP standard and requirements. DUSUP NOC is issued through Dubai Governments e-NOC system administered by RTA. NOC confirming.

3.0 PURPOSE

The purpose of this guideline is to assist the DUSUP/DPE NOC staff for NOC review and field staff for monitoring safe execution Trial Pit works within DUSUP Corridor or in the proximity of DUSUP/DPE Pipelines.

This guideline document is based on our previous experience of providing quality service of energy supply (Natural Gas) to Emirate of Dubai through the pipeline network.

4.0 REFERENCES

DUSUP NOC Standard Conditions - DP-OPSON-0056

DUSUP Ground Disturbance Safety - DPE-HSE-000111

5.0 ABBREVIATIONS & DEFINATIONS

5.1 Abbreviations:

Abbreviation	Description
ALARP	As Low As Reasonably Practicable
BM	Bench Mark
DEWA	Dubai Electricity and Water Authority

DM	Dubai Municipality
DEL	Dolphin Energy Limited
DPE	Dubai Petroleum Establishment
EMDAD	EMARAT, Air BP and Shell Joint Venture
EMARAT	Emirates General Petroleum Corporation
ENOC	Emirates National Oil Company
e-NOC	Electronic NOC
GCS	Gas Control Station
JAFZA	Jebel Ali Free Zone Authority
MS	Method Statement
MSRA	Method Statement and Risk Assessment
NOC	No Objection Certificate
Trakhees (PCFC)	Ports, Customs and Free zone Corporation (Trakhees)
PPE	Personal Protective Equipment
PTW	Permit to Work
RA	Risk Analysis
ROW	Road Right of Way
RTA	Roads and Transport Authority

5.2 Definitions

Term	Definition
Accident	The unexpected and undesirable occurrence directly associated with DUSUP operations and DUSUP asset/facility, which results or may result in human casualties or damage to property.
Angle of Repose	Angle of repose of a granular material is the steepest angle of descent or dip relative to the horizontal plane to which a material can be piled without slumping.
Bettering	Sloping the exposed face of an excavation wall back either at a uniform angle, or stepping it back uniformly.
Benching	Method of preventing collapse of excavation walls by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
Berm	A soil bund built over the pipeline as a protection cover.
Construction	The erection of any new buildings or structures, or the variations to the Infrastructure facilities or existing asset.
Control Measure	Provisions to reduce identified risks.
DPE	Dubai Petroleum Establishment responsible for the Operation of DUSUP Asset.
DUSUP Corridor	DUSUP Corridor is the land allocated by Dubai Municipality or other statutory government authority to DUSUP for the construction, operation and maintenance of gas and fuel pipelines in the emirates of Dubai.

e-NOC	The electronic NOC application that can be submitted via the online system (https:// noc.rta.ae/RTAeNOC/Webpages/common/login/login.aspx)
Excavation	Excavation is a man-made cut, cavity, trench or depression formed by earth removal.
Hazard	A Hazard is any source of potential damage, harm or adverse effects on people, property environment or organization.
Incident	An occurrence which affects or could affect the safety of people or the DUSUP asset.
No Objection Certificate (NOC)	A document approved by the DUSUP through e-NOC, for the technical design of proposed development or authorizing a contractor to carry out a Construction/Restricted Activity within the NOC Zones.
Permit to Work (PTW)	A written or digital approval granted by DPE that authorizes a person or persons to carry out specific work within a specified time frame within the proximity of DUSUP asset/plot boundary limit.
Pipeline Representative, Pipeline Operator or Patrol staff	The staff designated by DUSUP the duties of witnessing NOC works for compliance with NOC conditions and monitoring the safety of the pipelines.
Risk	A situation involving exposure to danger
Risk Assessment	A report prepared by the Applicant/Customer seeking DUSUP NOCs, identifying potential risks and mitigation measures involved in carrying out any Construction or Restricted Activity within the DUSUP NOC Zones.
Safety	The absence of any risk of harm or damage to the people, DUSUP asset/Infrastructure that is deemed unacceptable as per the DUSUP/DPE Safety Regulation or Standard Operating Procedure.
Shoring	Shoring is the form of prop or support, usually temporary that is used for supporting a structure or sides of excavation when in danger of collapse or cave-in.
Trench	A Trench is a narrow excavation. The depth is greater than the width, but not wider than 15 feet.
Trial Pit	Trial Pit or Trial Trench is the practice of manual digging of a test hole in the ground to ascertain the location or elevation of existing hydrocarbon pipelines/utilities.
Zone of influence	The area over which applied external loads (e.g: vehicles, plant, excavated material) are likely to affect the volume of soil around the excavation, a structure below ground or adjacent to the external load.

6.0 WHY TRIAL PIT IS REQUIRED?

Buried pipelines installed decades ago are often not well documented. Therefore Trial Pit is required to verify and record the location and elevation of existing DUSUP pipelines or existing utilities, in order that proposed work in the proximity of existing pipelines/utilities can be designed and executed to comply with the mandatory / safe separation distance from existing pipeline or utility.

7.0 TRIAL PIT NOC:

DUSUP receive and process NOC through the Dubai Government e-NOC (electronic NOC) system administered by RTA. The link for e-NOC application is:

[https:// noc.rta.ae/RTAeNOC/Webpages/common/login/login.aspx](https://noc.rta.ae/RTAeNOC/Webpages/common/login/login.aspx)

DUSUP NOC is issued for hydrocarbon pipelines that are owned and operated by DUSUP, ENOC, EMDAD and Dolphin Energy.

Note: Excavation within DUSUP/DPE Plant premises/facilities where DUSUP NOC is not applicable, refer to DPE/DUSUP procedure: DUSUP Ground Disturbance Safety - DPE-HSE-000111

7.1 When DUSUP TRIAL PIT NOC is Applicable?

DUSUP Trial Pit NOC is applicable for Trial Pit /Trial Trench activities within the NOC Zones classified as follows:

7.2 NOC Zones:

- 7.2.1 60m either side from the centre of pipelines or DUSUP Corridor limit, whichever is highest.
- 7.2.2 10m either side of the pipeline for the pipeline(s) located within DEWA or EGA (DUBAL) plot limits.
- 7.2.3 5m either side from centre of 8" Shell pipeline (Abandoned, Positively Isolated).
- 7.2.4 Margham Field Safety Zone.
- 7.2.5 10m radius buffer for all abandoned wells (Positively Isolated).

7.3 Submission Requirements:

Trial Pit NOC submission shall include but not limited to following:

- 7.3.1 AutoCAD drawing on DLTM coordinates datum showing the proposed trial pit location.
- 7.3.2 Pdf file of drawing showing the proposed trial pit location.
- 7.3.3 A site specific excavation method statement and excavation protection design with the shop drawing prepared as per the site hazard and control measures.
- 7.3.4 A site specific risk assessment with necessary control measure to reduce the risk to as low as reasonably practicable (ALARP).
- 7.3.5 Standard Trial Pit NOC is issued up to the maximum depth of 2.0meters. The trial pit depth exceeding 2.0meters in depth shall have detail excavation and trench protection proposal with the job specific and location specific method statement, risk assessment and drawing for DUSUP review.
- 7.3.6 Standard Trial Pit NOC does not cover dewatering works. For including dewatering work in the NOC, detail dewatering submission with the job specific and location specific method statement, risk assessment and drawing must be submitted.

7.4 Typical NOC Conditions:

Following are the commonly applicable NOC conditions. Additional site specific conditions may be applicable:

- 7.4.1 Strictly comply with Dubai Municipality (DM) excavation safety requirements as per the DM Code of Construction Safety Practice.
- 7.4.2 Approximate location of the existing pipeline must be checked using a pipeline locator and marked prior to commencement of the trial pit excavation.
- 7.4.3 Gas test shall be performed by trained personal in excavation exceeding 1.2m (4'-0"). Test to be conducted before employees enter the trench and regularly thereafter.
- 7.4.4 Shoring, step cutting (benching) or sloping (battering) or Shielding (Trench Box) must be provided for the excavation deeper than 1.2 meters to eliminate the risk of cave-in or trench collapse.
- 7.4.5 For step cutting or sloping, if the soil type of excavation is not confirmed the soil must have a slope of 1 ½ horizontal to 1 vertical (34 degrees). Type of trench protection must be identified in TRA.
- 7.4.6 The trench deeper than 1.2 m (4 feet) must have a safe means for workers to get in and out of the trench. (E.g. stairway, ladder, ramps). Means of egress must be fixed and secure and shall be within 7.6m (25 feet) of lateral travel. Ladders must extend a minimum of 3'.0" meter above the landing.
- 7.4.7 Plastic spades must be used while excavating within 0.50 meters of existing hydrocarbon pipeline.
- 7.4.8 Spoil and debris must be placed at least 1.2 m (4 feet) away from the edge of the excavation.
- 7.4.9 Approved barriers with deep excavation warning sign must be provided at a minimum 1.0 meter distance from the zone of influence or angle of repose line of excavation and no vehicle or storing of excavated material are permitted between the barrier and the edge of excavation.
- 7.4.10 Method of backfill and compaction shall be clearly described in method statement and shall be approved by DUSUP in advance.
- 7.4.11 Immediately after exposing the pipeline and before backfilling, the pipeline must be inspected by the DUSUP pipeline representative for condition of coating and any damage to the coating shall be repaired by DUSUP approved contractor before backfill. Condition of the pipeline on exposing and before backfill shall be recorded with photographs.
- 7.4.12 Elevation and location coordinates at the crown of the pipeline must be recorded in the presence of DUSUP representative.
- 7.4.13 A separate Construction NOC request with construction method statement including plan and cross section drawings detailing trial pit information along with a verified copy of trial pit record(s) must be submitted for DUSUP approval prior to the commencement of any construction work. Elevations and coordinates as per DM datum must be included in the drawing.
- 7.4.14 Minimum 300mm around the existing pipeline shall be backfilled with dune sand or clean sand of low chloride content (less than 0.05 percent) mixed with sufficient water and manually compacted to minimum 90% of relative density

for non-traffic areas. Minimum 95% of relative density of compaction must be achieved at the traffic area.

- 7.4.15 Excavated material may be reused for backfill over and above 300mm sand cover, provided back material is free of large stone (i.e., less than 3" or half the size of backfill layer whichever is less) all organic material, debris or other deleterious material. Maximum thickness of manual backfill layer shall be limited to 150mm (0'-6").
- 7.4.16 Extreme care is exercised to avoid any damage to the pipeline coating during the backfilling. If any coating damage occurs, all backfill and compaction activities shall cease until the coating damage is repaired, cured and cleared by DUSUP for backfill.
- 7.4.17 Existing pipeline berm must be restored to the original conditions.
- 7.4.18 Location of trial pit taken must be marked at surface with suitable peg / stake labeled with Trial Pit reference and corresponding e-NOC reference for the verification at the time of construction.

7.5 Disclaimer Condition

Following standard disclaimer condition shall be included in all NOC's:

- 7.5.1 Applicant shall comply with NOC conditions of DUSUP and other utility owners/services authorities such as Dubai Municipality, RTA, DEWA, ETISALAT, EITC (Du) Trakhees and UAE Armed Forces who may have services / utilities in the area that may be affected by your works.
- 7.5.2 Each utility owners / authority conditions are managing the risk of their installed assets, if there are conflict in conditions, the most stringent condition(s) shall be followed.
- 7.5.3 In case of other utilities or assets found during the trail pit where there are no approval from the concerned authority, the work has to be stopped until the respected authority approval is obtained.

8.0 TRIAL PIT SURVEY RECORD:

DUSUP Pipeline Representative shall witness trial pit work on the existing pipeline or within 10 meters of existing pipeline and verify the trial pit survey and record it on the trial pit record form (See Attachment -1)

The verified copy of trail pit record is shared with the contractor for the design of further works.

9.0 PIPELINE WITH SAFE ROAD/UTILITY CROSSING DEPTH:

Pipeline within the ROW may be constructed below existing utilities with the depth exceeding 4.5 meter (to the top of pipeline). If it is justified that the trial pit excavation to expose the pipeline in such case is not feasible and pipeline alignment is known, the trial pit verification may be limited* to the minimum depth required as follows:

9.1 For Road Crossing:

Excavate up to 2.5 meter below the existing or finished elevation of ground, whichever is deeper at the proposed protection slab and record the trial pit findings on the Trial Pit Survey report.

9.2 For Utilities Crossing Above Existing Pipeline within ROW:

Excavate up to 1.5 meter below the proposed bottom level of crossing and record the trial pit findings on the Trial Pit Survey report.

Note: *To be discussed and agreed with NOC Engineer.

Attachment 1: Trial Pit Survey Report

**Pipeline Department
Survey - Trial Pit**

Date : 03.08.2021 Pipeline : 48RM-2 KP# 02+187
 Proj Ref : N/A Location : AL YALAGES STREET
 NOC Ref : 15042021-2022 Contractor : DGT Contracting

DMBM Ref: <u>SS 20953</u>		Coordinates: E <u>478284.903</u> N <u>2769743.370</u> Elev: <u>25.895</u>			
Backsight (BS)	Intermediate sight (IS)	Foresight (FS)	Height of Instrument (HI)	Elevation / Reduced Level (RL)	Remarks
				<u>4.340</u>	<u>Ground Level</u>
				<u>5.164</u>	<u>Berm Level</u>
				<u>- 0.861</u>	<u>48RM 2 Pipe Top Level</u>
Pipeline Coordinates		E <u>476884.189</u> N <u>2768139.828</u>		* Elevations are as per DM Datum Survey Instrument : <u>GPS HIPER V TOPCOM</u>	

Contractor Surveyor : Mobin.K.G DUSUP Pipeline Rep. : Jeera
 Tel / Mob : 036 922 2517 Tel / Mob : 050-5504784
 Signature : [Signature] Signature : [Signature]

Note:
 If a temporary bench mark (TBM) is established (as per DM datum), the location of TBM must be accurately recorded and must be protected until the completion of works.

Form PL - 018