ISOMETRIC IFC - CHECK LIST

Line Number	**021921PNW0158**	**Stress CN / Level**	**Nº**	**Level:**	
Isometric Number	**027A1021921PNW0158_01**	**Process Approval Required**	**YES** ☐	**NO** ☑	
		Intrumetation Approval Required (N/A)	**YES** ☐	**NO** ☑	

Information to be attached:				
Master Copy of PID:	**YES** ☑	**N/A** ☐	**Nº** 800124-029-PID-0031-010	**Rev.** 1 IFC
PID Modification Sheet:	**YES** ☐	**N/A** ☑	**Nº**	**Rev.**
Equipment Vendor Dwg. :	**YES** ☐	**N/A** ☑	**Nº**	**Rev.**
Instrument Dwg. :	**YES** ☐	**N/A** ☑	**Nº**	**Rev.**
Project By-Pass [4] :	**YES** ☐	**N/A** ☑	**Nº**	**Rev.**
SPO Approved Isometric:	**YES** ☐	**N/A** ☑	**Rev.**	**Extraction Date:**
SIT Approved Isometric:	**YES** ☐	**N/A** ☑	**Rev.**	**Extraction Date:**

TechnipFMC – Butterfly Project

HOLDS

Nº	SHORT DESCRIPTION	RESOLVED (✓)

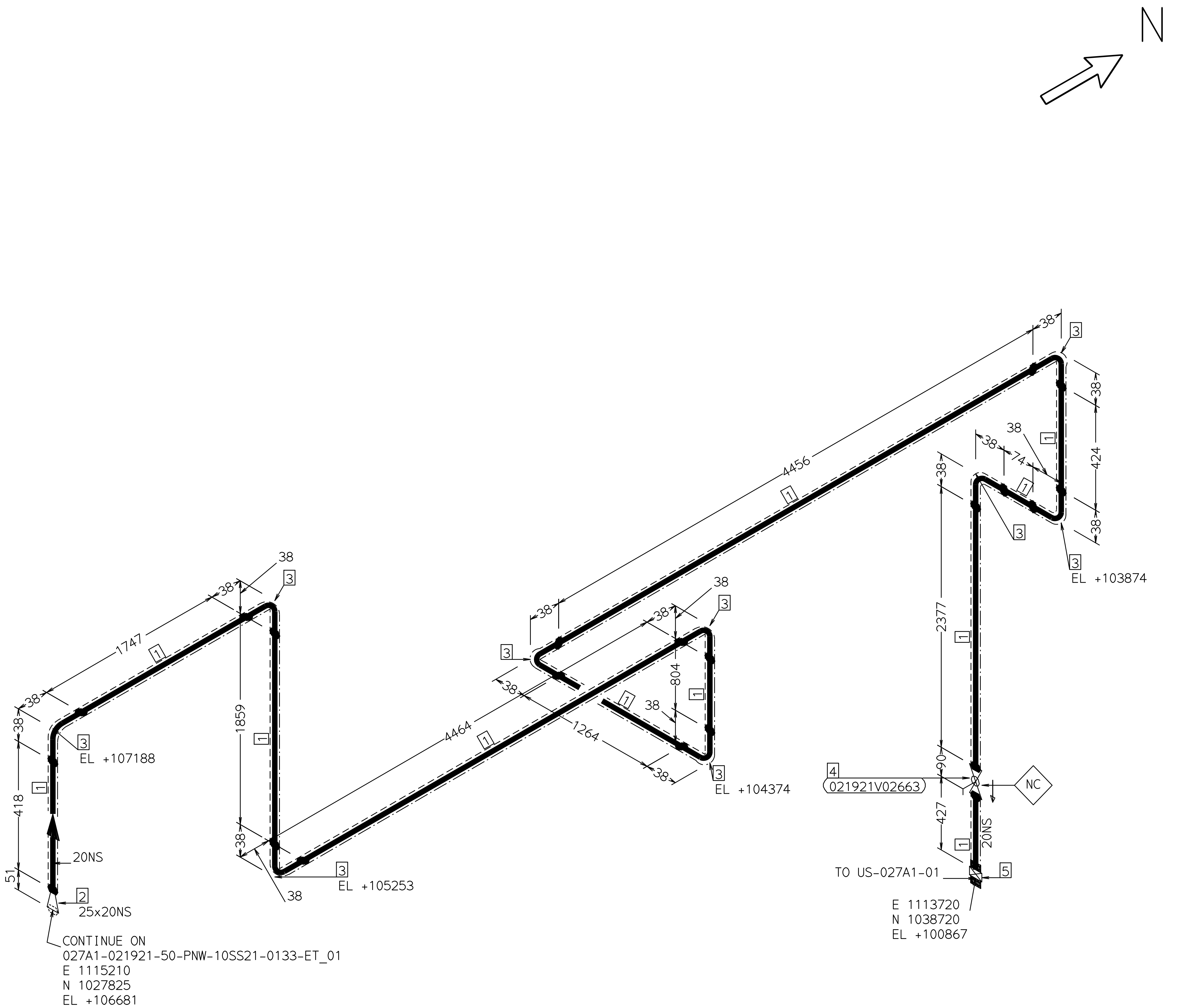
A VERIFICAR / *TO BE CHECKED* ***Revision By : (D) Designer / (LDG) Design Leader / (ST) Stress Specialist / (LST) Stress Leader / (SP) Supports Specialist / (LSP) Supports leader / (M) Materials / (SL) Spooler / (CHK) Issuer / (L) Discipline Lead***	**" N/A " NO APLICA / NOT APPLICABLE**	**IFC**	**REV 0** ☑	**REV 1** ☐	**REV 2** ☐
		✓	✗ [1]	1st-Chk [2]	2nd-Chk [3]
Revision By : (D) Designer / (LDG) Design Leader		**By: D**		**By: LDG**	
Iso Information — Nº de línea según PID y lista de líneas / *Line Nbr. according to PID and line list*		✓		✓	
Iso Information — Datos de la línea según lista de líneas / *Line data according to line list*		✓		✓	
Iso Information — Clase de tubería según PID y Lista de Líneas / *Piping class according to PID and Line List*		✓		✓	
Iso Information — Vinculo E3D con Diagrams (Process Unit, Temp Operación, Numeracion TODAS válvulas manuales) / Link between E3D and Diagrams (Process Unit, Op Temp, ALL manual valves Tagged)		✓		✓	
Iso Information — Diámetro de la línea indicado en número de línea en el cajetin / *Line diameter indicated in the line number in the title block*		✓		✓	
Equipment — Equipo modelado según plano Vendor válido para generar isométrica IFC / *Equipment modelled according Vendor drawing valid for Isometric IFC generation* *Código / Code: 2* ☐ *3* ☐	✓				
Equipment — Nombre de tubuladuras según PID y plano Vendor / *Name of nozzle according to PID and Vendor drawing*	✓				
Equipment — Rating y diámetro de tubuladuras según plano Vendor / *Rating and diameter of nozzles according to vendor drawing*	✓				
Equipment — Posición y elevación de tubuladuras según plano Vendor / *Position and elevation of nozzles according to Vendor drawing*	✓				
Revision By : (D) Designer / (LDG) Design Leader		**By: D**		**By: LDG**	
Line Design — Línea sin colisión (verificación incluyendo la nube de puntos) / *Line is clash free (checked including points cloud)*		✓		✓	
Line Design — Comentarios de SPO a líneas críticas recibidos e implementados antes de extracción final para emisión / *Process comments to critical lines received and implemented before final extraction for issuance*	✓				
Line Design — Verificación contra P&ID y Lista de Lineas / Check Iso vs P&ID and Line List : Correcta referencia de la continuidad de la isométrica en líneas nuevas, líneas existentes u otra hoja de la isométrica en los extremos de línea y sus ramales, incluyendo elevaciones y coordenadas / *Correct continuity isometric reference to new lines, existing lines or other isometric sheet in each end of the line and its branches including elevations and coordinates*		✓		✓	
Line Design — Verificación contra P&ID / Check Iso vs P&ID : Elementos en línea incluidos, secuencia de picajes, pendiente, sentido de flujo, numeración de instrumentos, cambios de especificación, cumplimiento de notas / *in-line components included, branch sequence, slope, flow direction, instrument numbering, pipe class breaks, notes accomplishment*		✓		✓	
Line Design — Verificación contra P&ID / Check Iso vs P&ID : Longitudes requeridas de entrada y/o salida a equipos, distancias y/o elevaciones mínimas o máximas requeridas, formación de condensados / *Required inlet and/or outlet lengths to equipments, minimum or maximum distances and/or elevations, condensate generation*		✓		✓	
Line Design — Comentarios de SIT a recibidos e implementados antes de extracción final para emisión / *Instrumentation comments received and implemented before final extraction for issuance*	✓				
Line Design — Verificación contra Planos de Vendor o Hook-up Instrumentacion / Check Iso vs Instrument Vendor Drawings or Hook-up : Tamaño de las válvulas de control y de seguridad, instalación de acuerdo a hook-up / *Size of control valves and safety valves, instrument installation according to hook-up*	✓				
Line Design — Picajes según tabla de picajes correspondiente / *Branch configuration according to correspondent branch table*	✓				
Line Design — Venteos y drenajes de Procesos según requerimientos de PIDs y de puntos altos y bajos para prueba hidrostática y modelados según "assembly" correspondiente / Process v*ents and drains according PID requirements and high and low points for hydrostatic test and modelled according proper assembly*		✓		✓	
Line Design — Verificación de distancia mínima entre soldaduras / *Check minimum distance between welds*		✓		✓	
Line Design — Notas explicativas adicionales incorporadas / *Additional clarification notes added*	✓				
Revision By : (ST) Stress Specialist / (LST) Stress Leader		**By: ST**		**By: LST**	
Stress — El cálculo de stress disponible no está pendiente de revisión en curso / *Available stress calculation is not awaiting for revision*					
Stress — Los requisitos según el cálculo de stress están incorporados (si son aplicables) / *Stress calculation requirements have been added (if applicable)*					
Revision By : (SP) Supports Specialist / (LSP) Supports leader		**By: SP**		**By: LSP**	
Supports — La línea está soportada por completo y la lista de soportes está actualizada en el exel extraído del E3D / *Line is completely supported and support list updated according file from E3D*					
Supports — Concepto de soporte y separación máxima entre soportes / *Support concept and support spans*					
Supports — Requerimientos de soportes estan de acuerdo al cálculo de stress y ajustados con el especialista de Stress / *Support requirements according to stress calculation note are included and adjusted jointly with stress specialist*					
Supports — Numeración correcta de los soportes / *Supports correctly numbered*					
Supports — Código de soportes correctamente indicados (STD - SPC - COM - MRS - PRF) / *Support code correctly indicated (STD - SPC - COM - MRS - PRF)*					
Supports — Marcado de elementos soldados de los soportes en Iso Spool preliminar correspondiente / *Mark-up of welded supports components in the correspondent preliminary Iso Spool*	N/A	---	---	---	---
Revision By : (M) Materials		**By: M**			
Materials — La Linea pertence a alguna o varias categorias de Criticidad. La Linea está listada en la Lista de Lineas Críticas de Materiales. Sus isometricas requieren Verificacion exahustiva / The Line belongs to some or several categories of Criticality. The Line is listed in the Critical Material Lines List. The isometrics require exahustive verification	N/A				
Materials — Todos los materiales están identificados en la isométrica y se encuentran listados en el listado de materiales / *All materials are identified in the isometric and are listed in the BOM*		✓			
Materials — Añadidos elementos especiales de tubería en Línea de acuerdo a PIDs última revisión y lista de especiales de tubería (Verificar en adicional correcta Numeración, criterios de Posicionamiento en diseño si aplican) / Inclusion of special piping elements in line according to PIDs latest review and Special Piping Material List (Verify identification number, piping design location criteria if applicable)		✓			
Materials — Nº de identificación de válvulas manuales (según PID)/ *Identification number of manual valve (according to PID)*		✓			
Materials — Todas las juntas y pernos colocadas según tipo requerido (RF, FF, Bolts, Machine Bolts) / *All gaskets and bolts placed according required type (RF, FF, Bolts, Machine Bolts)*	N/A				
Materials — Extensión de volante de válvula modelada y reflejada en lista de materiales de la isométrica / *Valves axis extension modelled and reflected in Isometric BOM*	N/A				
Materials — Válvulas colocadas según PID y Piping Class / *Valves placed according PID an Piping Class*		✓			
Revision By : (CHK) Issuer		**By: CHK**			
		1st-Chk [2] ✓	1st-Chk [2] ✗	2nd-Chk [3] ✓	2nd-Chk [3] ✗
Final Check — La isométrica verificada por Procesos (SPO) se corresponde a la última revisión / *The isometric verified by Process (SPO) corresponds to its last revision*	✓				
Final Check — La isométrica verificada por Instrumentación (SIT) se corresponde a la última revisión / *The isometric verified by Instrumentation (SIT) corresponds to its last revision*	✓				
Final Check — Las notas a mano están incorporadas en las isométricas / *The hand-made annotation is included*		✓			
Final Check — La revisión de los documentos para la verificación siguen siendo las actuales / *Current revision of documents for checking are still the latest available*		✓			
Final Check — El número de revisión y la fecha son correctos / *The revision number and the date are correct*		✓			
Final Check — Todos los comentarios se han revisado para se incluidos o descartados / *All comments have been checked to be included or discarded*		✓			
Final Check — Holds resueltos o en su defecto By-Pass aprobado / *Holds resolved or instead By-Pass approved*		✓			

SIGNATURES (Name and date)

DESIGN LEADER (LD)	*REVIEWED* By Ruth Herrero at 2:23 pm, Dec 11, 2020	**SUPPORTS LEADER (LSP)**		**ISSUER (CHK)**	*REVIEWED* By oscar at 10:05 am, Dec 18, 2020
STRESS LEADER (LST)		**MATERIALS (M)**	*REVIEWED* By Jose G. Suarez at 11:45 am, Dec 14, 2020	**DISCIPLINE LEAD (L)**	

NOTES:

[1] If "X" marqued, a "HOLD" note should be included in the Holds area for justification.
[2] 1st checking round: Checker to place a (✓) or a (✗) confirming or not Designer verification. A (✓) or a (✗) should also be placed to confirm or reject any (✗) mark placed by the Designer confirming or not the implicit HOLD.
[3] 2nd checking round: Checker to place a (✓) to validate the points that were not confirmed in the 1st round and were corrected by respective Specialist.
[4] If an isometric with HOLD is approved by IFC Leader for issuance, the correspondent By-Pass should be attached.



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	20	Pipes (Length), EN 10220, PE, EFW + 100% RT, -,/2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24Y3	18.4M
2	25 x 20	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -,/2.3MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9VR1	1
3	20	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 4,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0J0PG	9
4	20	Bal BW,RB,SP,PN 63,BW Ends,Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3R	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
5	20	021921A237 Hose Connection as per 30205-042-001000-001	C40DBK4U	1

PIPING DPT.
ISSUER
CHECKED
By oscar at 10:04 am, Dec 18, 2020

REV	DATE	DWN	CHK	APP	DESCRIPTION
0	11/12/20	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION

All dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

NOTES:

For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS	
LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-001000-200
PIPING SUPPORT	30207-042-001000-001

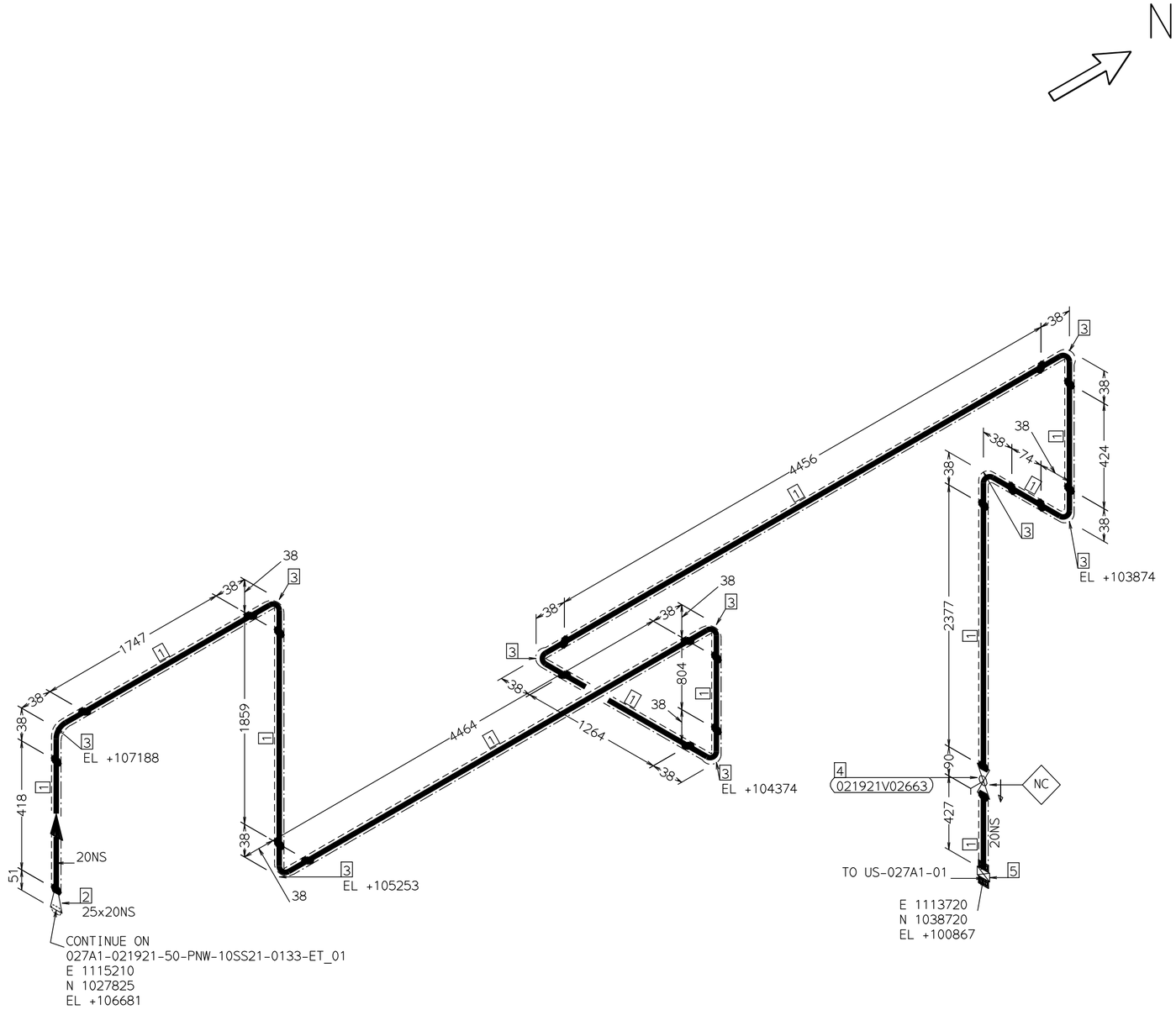
SPEC	10SS21
SYMBOLOGY	
Insulated Pipe	Insulated and Traced Pipe

PROJECT DESCRIPTION/LOCATION
BUTTERFLY PROJECT/KREFELD

TechnipFMC Cargill®

PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
029	027A1	021921-20-PNW-10SS21-0158-ET	01	1 OF 1	0

EXTRACTION DAY 11 DEC 2020 E3D NAME027A1-021921-20-PNW-10SS21-0158-ET_01



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
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4	20	Bal BW,RB,SP,PN 63,BW Ends,Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3R	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
5	20	021921A237 Hose Connection as per 30205-042-001000-001	C40DBK4U	1

PIPING DPT.
MATERIALS
CHECKED
By Jose G. Suarez at 11:46 am, Dec 14, 2020

REV	DATE	DWN	CHK	APP	DESCRIPTION
0	11/12/20	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION

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NOTES:

For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-001000-200
PIPING SUPPORT	30207-042-001000-001

SPEC 10SS21

SYMBOLOGY

Insulated Pipe

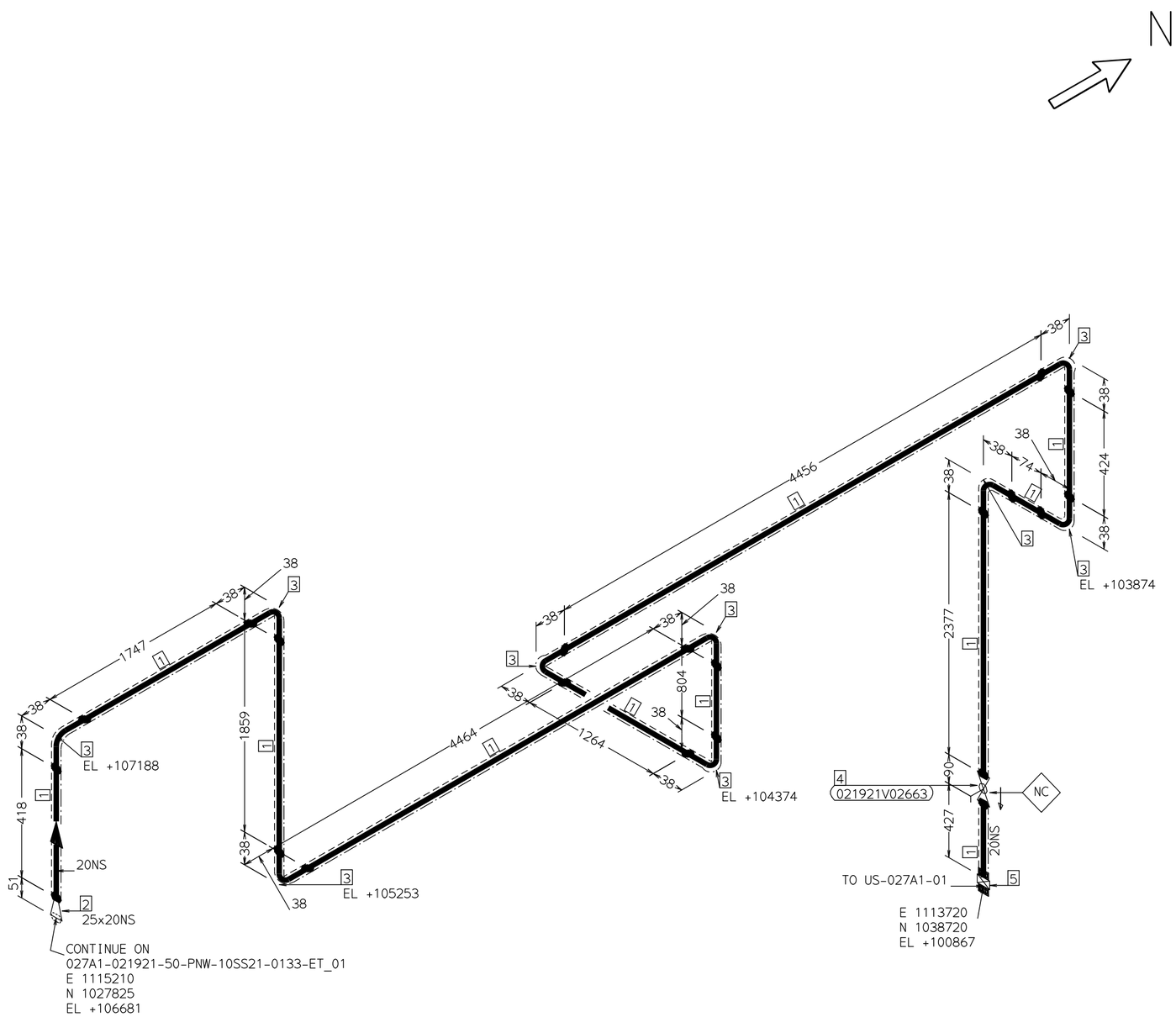
Insulated and Traced Pipe

PROJECT DESCRIPTION/LOCATION
BUTTERFLY PROJECT/KREFELD

TechnipFMC Cargill

PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
029	027A1	021921-20-PNW-10SS21-0158-ET	01	1 OF 1	0

EXTRACTION DAY 11 DEC 2020 E3D NAME027A1-021921-20-PNW-10SS21-0158-ET_01



MATERIAL LIST - FABRICATION

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3	20	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 4,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0J0PG	9
4	20	Bal BW,RB,SP,PN 63,BW Ends,Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3R	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
5	20	021921A237 Hose Connection as per 30205-042-001000-001	C40DBK4U	1

PIPING DPT.
DESIGN
CHECKED
By Ruth Herrero at 2:23 pm, Dec 11, 2020

PIPING DPT.
DESIGNED
By smartinez at 1:02 pm, Dec 11, 2020

REV	DATE	DWN	CHK	APP	DESCRIPTION
0	11/12/20	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION

All dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

NOTES:

For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-001000-200
PIPING SUPPORT	30207-042-001000-001

SPEC 10SS21

SYMBOLOGY

Insulated Pipe

Insulated and Traced Pipe

PROJECT DESCRIPTION/LOCATION
BUTTERFLY PROJECT/KREFELD

TechnipFMC CargIII

PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
029	027A1	021921-20-PNW-10SS21-0158-ET	01	1 OF 1	0

EXTRACTION DAY 11 DEC 2020 E3D NAME027A1-021921-20-PNW-10SS21-0158-ET_01