WELDER LIST AND CERTIFICATE
(STRUCTURE OF CIL TANK AREA)

CLIENT : **PT. CITRA PALU MINERALS (CPM)**

PROJECT NAME : **POBOYA 2000 TPD EXPANSION PROJECT**

LOCATION : **PALU, SULAWESI**

CONSULTANT : **PT. COMO ENGINEERS (PT. CE)**

VENDOR : **PT. HANAZONO ENGINEERING INDONESIA**

DOCUMENT NO. : **E2601-4400-PR0-011**

FOR APPROVAL

☐AP	APPROVED	
☐AN	APPROVED AS NOTED	
☐RE	NOT APPROVED (Re-Submit)	
☐RV	REVIEWED	
☐RN	REVIEWED WITH NOTES	
☐NR	NOT BE RETURNED	
RETURN DATE		
CPM PT Citra Palu Minerals		

B	August 31, 2026	Issue For Approval	Afifah	Rusnandi	Murasato	
A	June 01, 2026	Issue For Approval	Benridho	Rusnandi	Murasato	
REV	**DATE ISSUED**	**ISSUE PURPOSE**	**PREPARE**	**CHECKED**	**APPROVED**	**AUTHORIZED**

Revision History

REV. No.	DATE	DESCRIPTION	REVISION BY
A	June 01, 2026	First Issue	BR
B	August 31, 2026	- Page No. 5 List of welder - Page No. 8, 11,12,13,14,15 Attachment Welder certificate and WPS/PQR, WPQT,NDE RT	AF

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1. GENERAL

1.1. Scope

This List of welder and Certificate covers Quality Control requirements for applied at welding process , for supporting fabrication of Steel structure CIL Tanks Area for Poboya 2000TPD Expansion Project and to be use for Structure for CIL Tank area, the owned by PT Citra Palu Minerals. The project is located at Palu, Sulawesi Tengah, Indonesia., made by PT. Hanazono Engineering Indonesia which has been compiled according to all the requirements of Purchase Order (PO) and Request for Quotation (RFQ) Steel Structure and Plate works Supply and Installation.
This is item to be fabrication as below :

1. Fabrication and Installation Structure for CIL Tank at Vessel Loaded Carbon
2. Fabrication and Installation Structure for CIL Tank for Trash Screen
3. Fabrication and Installation Structure for CIL Tank for Loaded Carbon Screen
4. Fabrication and Installation Structure for CIL Tank for Baren Carbon Screen
5. Fabrication and Installation Structure for CIL Tank for Carbon Safety Screen
6. Fabrication and Installation Structure for CIL Tank for Leach Feed Sampler
7. Fabrication and Installation Structure for CIL Tank for Tailing Sampler

1.2. Purpose

This Welder List is mentioned of qualification and capabillity of welder to done the welding process according requirement and Requisition for Equipment steel structure. This welder list qualification base Code or Standard AWS D1.1.

1.3. Reference

This procedure prepared in accordance with following reference:

- JIS Standards
- ASTM Standards
- ANSI
- AWS D1.1
- Local Regulation Disnaker/Migas
- Request for Quotation (RFQ) Steel Structure and Plate works Supply and Install Document No. 2000-4000-STR-RFQ-002

2. LIST OF WELDER

PT. HANAZONO Engineering Indonesia — We are always partner with you	WELDER LIST (According to AWS D1.1)	Document No.	E2601-D-PRO-005
		Date	September 08, 2026
		Rev. No.	2

Project Name : POBOYA 2000 TPD EXPANSION PROJECT

P/O No. : 14898

P/O Description : STRUCTURE OF CIL TANK AREA

No.	Welder I.D No.	Welder Name	Process	Test of T (mm)	Test Position	Position Qualified *1 & *4	Material Spec.	Group No.	Weld THK Range mm	Material P. No	Filler metal F. No.	DIA Range (≤ 24" OD)	Backing	Consumable Inserts	AC/DC (EN or EP)	Gas Backing	Certified	Certificate No	Expired Date	Remark
1	JH-1006	JUHANDA	SMAW	25	2G	F/H	SA 36	I/II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :3 -Unlimited Diameter Pipe : ≥ 600	With/Without	Without	DCEP	Weld Metal	Migas	1483/AL/DMTS/2026	January 28, 2029	
2	SR-0904	SAHRUL	SMAW	25	3G	F/V	SA 36	I/II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :3 -Unlimited Diameter Pipe : ≥ 600	With/Without	Without	DCEP	Weld Metal	Migas	1484/AL/DMTS/2026	January 28, 2029	
			SMAW	5.5	2G	F/V	SA 106 GRB	II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :3 -Unlimited Diameter Pipe : ≥ 600	With/Without	Without	DCEP	Weld Metal	Migas	5900/AL/DMTS/2026	August 07, 2029	
3	RM-0815	ROMLI A	SMAW	25	4G	F/H/V/O	SA 36	I/II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :3 -Unlimited Diameter Pipe : ≥ 600	With/Without	Without	DCEP	Weld Metal	Migas	1485/AL/DMTS/2026	January 28, 2029	
4	YD-1138	YODI	SMAW	25	5F	F/H	SA 36+SA106B	I/II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :N/A Diameter Pipe : 1 in	With/Without	Without	DCEP	Weld Metal	Migas	1486/AL/DMTS/2026	January 28, 2029	
			SMAW	5.5	2G	F/H	SA 106 GRB	II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :N/A Diameter Pipe : 1 in	With/Without	Without	DCEP	Weld Metal	Migas	5901/AL/DMTS/2026	August 07, 2029	
5	HAK-01	AFID RUDIANTO	SMAW	16	3G	F/V	SA 36	I/II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :3 -Unlimited Diameter Pipe : ≥ 600	With/Without	Without	DCEP	Weld Metal	Migas	5898/AL/DMTS/2026	August 07, 2029	
6	HAK-02	ASEP SHOHIBI	SMAW	16	3G	F/V	SA 36	I/II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :3 -Unlimited Diameter Pipe : ≥ 600	With/Without	Without	DCEP	Weld Metal	Migas	5899/AL/DMTS/2026	August 07, 2029	

No.	Welder I.D No.	Welder Name	Process	Test of T (mm)	Test Position	Position Qualified *1 & *4	Material Spec.	Group No.	Weld THK Range mm	Material P. No	Filler metal F. No.	DIA Range (≤ 24" OD)	Backing	Consumable Inserts	AC/DC (EN or EP)	Gas Backing	Certified	Certificate No	Expired Date	Remark
7	HAD-01	ARIFIN	SMAW	16	3G	F/V	SA 36	I/II	3 - Unlimited	1	4	Fillet :3 -Unlimited Groove :3 -Unlimited Diameter Pipe : ≥ 600	With/Without	Without	DCEP	Weld Metal	Migas	5897/AL/DMTS/2026	August 07, 2029	

REMARKS

* 1. F = Flat, H = Horizontal, V = Vertical, O = Overhead
* 2. S = Spray, G = Globular, P = Pulsating
* 3. Direct visual Control/No Automatic Joint Tracking/ Single pass or Multiple passes
* 4. Plate and Pipe (Over 24" OD)
* 5. Overlay

Prepared by :

Afifah

Date : June 1, 2026

Approved by :

Rusnandi

Date : June 1, 2026

3. WELDER CETIFICATE

Attachment-1 Certificate No. : 1483/AL/DMTS/2026 (Juhanda)

Lampiran Kualifikasi Ahli Las No. : 0194/AYG/AL/DMT/2026
Tanggal : 11 Maret 2026

LAPORAN KUALIFIKASI AHLI LAS
Nomor: 1483/AL/DMTS/2026

Menyatakan bahwa :
Nama : **JUHANDA**
Nomor Registrasi : TS-390126/29/201887.01
Tempat dan tanggal lahir : Serang, 10 Juni 1987
Alamat : Kp. Kendal, RT/RW 011/007
Kec. Bojonegara – Kab. Serang
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**
Telah dikualifikasi sebagai Ahli Las sesuai dengan :
Nomor WPS : 01-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 01A-WPS-HEI-AWS-MIGAS-26
01B-WPS-HEI-AWS-MIGAS-26
01C-WPS-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut :

	Pengujian Lapangan	Batasan Kualifikasi
Proses Pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	AC, DC
Posisi/Arah Pengelasan	2G	Sesuai Tabel 6.11
Material Dasar :		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	N/A	Sesuai Tabel 6.11
- Tebal (mm)	25 mm	3 mm – Maksimum yang akan dilas
- Spesifikasi Material Uji	ASTM A36	Sesuai Tabel 5.6
Bahan Pengisi	E7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas Pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Dengan Backing (SMAW)	Dengan Backing (SMAW)
Jenis Pemeriksaan :		
- Visual	Ya	
- Pemeriksaan Tak Merusak (NDE)	Radiografi	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **28 Januari 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

196/AL/DMT/2026

Attachment-2 Certificate No. : 1484/AL/DMTS/2026 (Sahrul)

Lampiran Kualifikasi Ahli Las No. : 0194/AYG/AL/DMT/2026
Tanggal : 11 Maret 2026

LAPORAN KUALIFIKASI AHLI LAS

Nomor: 1484/AL/DMTS/2026

Menyatakan bahwa :
Nama : **SAHRUL**
Nomor Registrasi : TS-590126/29/191682.01
Tempat dan tanggal lahir : Serang, 09 April 1982
Alamat : Link. Tegal Wangi Rejane, RT/RW 003/001
Kec. Gerogol – Kota Cilegon
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**

Telah dikualifikasi sebagai Ahli Las sesuai dengan :
Nomor WPS : 01-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 01A-WPS-HEI-AWS-MIGAS-26
01B-WPS-HEI-AWS-MIGAS-26
01C-WPS-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut :

	Pengujian Lapangan	Batasan Kualifikasi
Proses Pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	AC, DC
Posisi/Arah Pengelasan	3G	Sesuai Tabel 6.11
Material Dasar :		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	-	Sesuai Tabel 6.11
- Tebal (mm)	25 mm	3 mm – Maksimum yang akan dilas
- Spesifikasi Material Uji	ASTM A36	Sesuai Tabel 5.6
Bahan Pengisi	E7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas Pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Dengan Backing (SMAW)	Dengan Backing (SMAW)
Jenis Pemeriksaan :		
- Visual	Ya	
- Pemeriksaan Tak Merusak (NDE)	Radiografi	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **28 Januari 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

196/AL/DMT/2026

Attachment-3 Certificate No. : 5900/AL/DMTS/2026 (Sahrul)

Lampiran Kualifikasi Ahli Las No. : 0679/AYG/AL/DMT/2026
Tanggal : 27 Agustus 2026

LAPORAN KUALIFIKASI AHLI LAS
Nomor: 5900/AL/DMTS/2026

Menyatakan bahwa:
Nama : **SAHRUL**
Nomor Registrasi : TS-380826/29/191682.01
Tempat dan tanggal lahir : Serang, 09 April 1982
Alamat : Link. Tegal Wangi Rejane, RT/RW 003/001
Kec. Gerogol – Kota Cilegon
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**

Telah dikualifikasi sebagai ahli las sesuai dengan :
Nomor WPS : 02-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 02-PQR-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut:

	Pengujian lapangan	Batasan kualifikasi
Proses pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	DCEP
Posisi/Arah pengelasan	2G	Sesuai Tabel 10.8
Material Dasar:		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	NPS 2 inch (60,3 mm)	Sesuai Tabel 10.12
- Tebal (mm)	5,54 mm	3 mm – 20 mm
- Spesifikasi Material Uji	SA 106 Gr. B	Sesuai Tabel 5.6
Bahan pengisi	E 7016 & E 7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Tanpa Backing	Tanpa/Dengan Backing
Jenis Pemeriksaan :		
- Visual	Ya	
- Uji Tak Merusak (NDT)	Uji Radiography	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **07 Agustus 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

678/AL/DMT/2026

Attachment-4 Certificate No. : 1485/AL/DMTS/2026 (Romli)

Lampiran Kualifikasi Ahli Las No. : 0194/AYG/AL/DMT/2026
Tanggal : 11 Maret 2026

LAPORAN KUALIFIKASI AHLI LAS
Nomor: 1485/AL/DMTS/2026

Menyatakan bahwa :
Nama : **ROMLI**
Nomor Registrasi : TS-550126/29/111678.01
Tempat dan tanggal lahir : Serang, 01 April 1978
Alamat : Kp. Kepaten, RT/RW 003/002
Kec. Bojonegara – Kab. Serang
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**
Telah dikualifikasi sebagai Ahli Las sesuai dengan :
Nomor WPS : 01-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 01A-WPS-HEI-AWS-MIGAS-26
01B-WPS-HEI-AWS-MIGAS-26
01C-WPS-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut :

	Pengujian Lapangan	Batasan Kualifikasi
Proses Pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	AC, DC
Posisi/Arah Pengelasan	4G	Sesuai Tabel 6.11
Material Dasar :		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	-	Sesuai Tabel 6.11
- Tebal (mm)	25 mm	3 mm – Maksimum yang akan dilas
- Spesifikasi Material Uji	ASTM A36	Sesuai Tabel 5.6
Bahan Pengisi	E7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas Pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Dengan Backing (SMAW)	Dengan Backing (SMAW)
Jenis Pemeriksaan :		
- Visual	Ya	
- Pemeriksaan Tak Merusak (NDE)	Radiografi	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **28 Januari 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

196/AL/DMT/2026

Attachment-5 Certificate No. : 1486/AL/DMTS/2026 (Yodi)

Lampiran Kualifikasi Ahli Las No. : 0194/AYG/AL/DMT/2026
Tanggal : 11 Maret 2026

LAPORAN KUALIFIKASI AHLI LAS

Nomor: 1486/AL/DMTS/2026

Menyatakan bahwa :
Nama : **YODI ARIFIN**
Nomor Registrasi : TS-670126/29/112361.01
Tempat dan tanggal lahir : Tasik Malaya, 01 November 1961
Alamat : Taman Pesona, RT/RW 011/008
Kec. Taktakan -- Kota Serang
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**

Telah dikualifikasi sebagai Ahli Las sesuai dengan :
Nomor WPS : 03-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 03-PQR-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut :

	Pengujian Lapangan	Batasan Kualifikasi
Proses Pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	DCEP
Posisi/Arah Pengelasan	5F	Sesuai Tabel 10.8
Material Dasar :		
- Desain sambungan	Fillet	Sesuai desain sambungan
- Diameter inch (mm)	60,3 mm	Sesuai Tabel 10.12
- Tebal (mm)	5,54 mm	3 mm – Maksimum yang akan dilas
- Spesifikasi Material Uji	SA 106 Gr. B to ASTM A36	Sesuai Tabel 5.6
Bahan Pengisi	E7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas Pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Dengan Backing (SMAW)	Dengan Backing (SMAW)
Jenis Pemeriksaan :		
- Visual	Ya	
- Pemeriksaan Tak Merusak (NDE)	Penetrant Test	
- Uji Rusak (DT)	Macroetch	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **28 Januari 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

196/AL/DMT/2026

Attachment-6 Certificate No. : 5901/AL/DMTS/2026 (Yodi)

Lampiran Kualifikasi Ahli Las No. : 0679/AYG/AL/DMT/2026
Tanggal : 27 Agustus 2026

LAPORAN KUALIFIKASI AHLI LAS

Nomor: 5901/AL/DMTS/2026

Menyatakan bahwa:
Nama : **YODI ARIFIN**
Nomor Registrasi : TS-410826/29/112361.01
Tempat dan tanggal lahir : Tasikmalaya, 01 November 1961
Alamat : Taman Pesona, RT/RW 011/008
Kec. Taktakan – Kota Serang
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**

Telah dikualifikasi sebagai ahli las sesuai dengan :
Nomor WPS : 02-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 02-PQR-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut:

	Pengujian lapangan	Batasan kualifikasi
Proses pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	DCEP
Posisi/Arah pengelasan	2G	Sesuai Tabel 10.8
Material Dasar:		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	NPS 2 inch (60,3 mm)	Sesuai Tabel 10.12
- Tebal (mm)	5,54 mm	3 mm – 20 mm
- Spesifikasi Material Uji	SA 106 Gr. B	Sesuai Tabel 5.6
Bahan pengisi	E 7016 & E 7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Tanpa Backing	Tanpa/Dengan Backing
Jenis Pemeriksaan :		
- Visual	Ya	
- Uji Tak Merusak (NDT)	Uji Radiography	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **07 Agustus 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

678/AL/DMT/2026

Attachment-7 Certificate No. : 1486/AL/DMTS/2026 (Arifin)

Lampiran Kualifikasi Ahli Las No. : 0679/AYG/AL/DMT/2026
Tanggal : 27 Agustus 2026

LAPORAN KUALIFIKASI AHLI LAS
Nomor: 5897/AL/DMTS/2026

Menyatakan bahwa:
Nama : **ARIFIN**
Nomor Registrasi : TS-220826/29/122084.01
Tempat dan tanggal lahir : Serang, 02 Agustus 1984
Alamat : Link. Langon III, RT/RW 001/005
Kec. Pulomerak – Kota Cilegon
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**

Telah dikualifikasi sebagai Ahli Las sesuai dengan :
Nomor WPS : 01-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 01A-WPS-HEI-AWS-MIGAS-26
01B-WPS-HEI-AWS-MIGAS-26
01C-WPS-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut:

	Pengujian lapangan	Batasan kualifikasi
Proses pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	AC, DC
Posisi/Arah pengelasan	3G	Sesuai Tabel 6.11/ Naik
Material Dasar:		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	N/A	Sesuai Tabel 6.11
- Tebal (mm)	16 mm	3 mm – 32 mm
- Spesifikasi Material Uji	ASTM A36	Sesuai Tabel 5.6
Bahan pengisi	E 7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Dengan Backing (SMAW)	Dengan Backing (SMAW)
Jenis Pemeriksaan :		
- Visual	Ya	
- Uji Tak Merusak (NDT)	Uji Radiography	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **07 Agustus 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

678/AL/DMT/2026

Attachment-8 Certificate No. : 5898/AL/DMTS/2026 (Afid Rudianto)

Lampiran Kualifikasi Ahli Las No. : 0679/AYG/AL/DMT/2026
Tanggal : 27 Agustus 2026

LAPORAN KUALIFIKASI AHLI LAS
Nomor: 5898/AL/DMTS/2026

Menyatakan bahwa:
Nama : **AFID RUDIANTO**
Nomor Registrasi : TS-230826/29/161674.01
Tempat dan tanggal lahir : Serang, 06 April 1974
Alamat : Link. Leuweung Sawo, RT/RW 002/009
Kec. Purwakarta – Kota Cilegon
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**

Telah dikualifikasi sebagai Ahli Las sesuai dengan :
Nomor WPS : 01-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 01A-WPS-HEI-AWS-MIGAS-26
01B-WPS-HEI-AWS-MIGAS-26
01C-WPS-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut:

	Pengujian lapangan	Batasan kualifikasi
Proses pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	AC, DC
Posisi/Arah pengelasan	3G	Sesuai Tabel 6.11/ Naik
Material Dasar:		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	N/A	Sesuai Tabel 6.11
- Tebal (mm)	16 mm	3 mm – 32 mm
- Spesifikasi Material Uji	ASTM A36	Sesuai Tabel 5.6
Bahan pengisi	E 7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Dengan Backing (SMAW)	Dengan Backing (SMAW)
Jenis Pemeriksaan :		
- Visual	Ya	
- Uji Tak Merusak (NDT)	Uji Radiography	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **07 Agustus 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

678/AL/DMT/2026

Attachment-9 Certificate No. : 5899/AL/DMTS/2026 (Asep Sohibi)

Lampiran Kualifikasi Ahli Las No. : 0679/AYG/AL/DMT/2026
Tanggal : 27 Agustus 2026

LAPORAN KUALIFIKASI AHLI LAS
Nomor: 5899/AL/DMTS/2026

Menyatakan bahwa:
Nama : **ASEP SHOHIBI**
Nomor Registrasi : TS-170826/29/201894.01
Tempat dan tanggal lahir : Serang, 10 Juni 1994
Alamat : Kp. Ampean, RT/RW 002/001
Kec. Bojonegara – Kab. Serang
Perusahaan : **PT HANAZONO ENGINEERING INDONESIA**

Telah dikualifikasi sebagai Ahli Las sesuai dengan :
Nomor WPS : 01-WPS-HEI-AWS-MIGAS-26
Nomor PQR : 01A-WPS-HEI-AWS-MIGAS-26
01B-WPS-HEI-AWS-MIGAS-26
01C-WPS-HEI-AWS-MIGAS-26
Standar : **AWS D1.1: 2025**
Dengan data sebagai berikut:

	Pengujian lapangan	Batasan kualifikasi
Proses pengelasan	SMAW	SMAW
Sifat Listrik	DCEP	AC, DC
Posisi/Arah pengelasan	3G	Sesuai Tabel 6.11/ Naik
Material Dasar:		
- Desain sambungan	Double "V" Groove	Sesuai desain sambungan
- Diameter inch (mm)	N/A	Sesuai Tabel 6.11
- Tebal (mm)	16 mm	3 mm – 32 mm
- Spesifikasi Material Uji	ASTM A36	Sesuai Tabel 5.6
Bahan pengisi	E 7018 (F No. 4, AWS 5.1)	F1 s.d. F4
Gas pelindung	-	-
Backing Gas	-	-
Backing / Backweld	Dengan Backing (SMAW)	Dengan Backing (SMAW)
Jenis Pemeriksaan :		
- Visual	Ya	
- Uji Tak Merusak (NDT)	Uji Radiography	
- Uji Rusak (DT)	-	
- Dan lain-lain	-	

Kualifikasi Ahli Las ini hanya berlaku pada **PT HANAZONO ENGINEERING INDONESIA** sampai dengan tanggal **07 Agustus 2029**. Bila dalam waktu tiga bulan secara terus menerus tidak bekerja sesuai kualifikasinya maka Kualifikasi Ahli Las ini dianggap tidak berlaku lagi.

Diuji Oleh :
Inspektur Migas

Puji Trijatmiko, ST
NIP 19860617 201101 1003

678/AL/DMT/2026

Attachment-10 : WPS and PQR Reference, WQT, NDE RT, Macroetching.

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Head Office : Jl. Raya Bojonegara-Serdang No.44 RT. 001/RW.001
Desa Kertasana, Kecamatan Bojonegara, Kabupaten Serang
Banten, Indonesia (42414)
Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

WELDING PROCEDURE SPECIFICATION (WPS)

Applicable Code: AWS D1.1/1.1M: 2025, Structural Welding Code - Steel

Page 1 of 3

☐ PREQUALIFIED (Pra-Kualifikasi) ☐ QUALIFIED BY TESTING (Kualifikasi dengan Pengujian)

WPS NO. (No. PWPS) : 01-WPS-HEI-AWS-MIGAS-26 DATE (Tanggal) : February 01, 2026 SUPPORTING PQR NO. (No. PQR Pendukung) : 01A-PQR-HEI-AWS-MIGAS-26, 01B-PQR-HEI-AWS-MIGAS-26, 01C-PQR-HEI-AWS-MIGAS-26

REVISION NO. (Revisi No.) : 0 DATE (Tanggal) : -

WELDING PROCESS (ES) (Proses Pengelasan) : SMAW TYPE (S) (Tipe) : Manual

JOINTS DESIGN USED (Desain Sambungan yang Digunakan)

TYPE (Tipe) : See Joint Detail

☑ SINGLE ☑ DOUBLE WELD

BACKING (Backing) : ☑ YES ☐ NO

BACKING MATERIAL (Material Backing) : Weldmetal/Metal/Ceramic

ROOT OPENING (Ukuran Celah Root) : See Joint Detail

ROOT FACE DIMENSION (Ukuran Pinggiran Root) : See Joint Detail

GROOVE ANGLE (Sudut Groove) : See Joint Detail

RADIUS (J-U) (Jari-Jari (J-U)) : N/A

BACK GOUGING (Back Gouging) : ☑ YES ☐ NO

METHOD (Metoda) : Carbon arc gouging and/or Grinding

JOINT DETAIL (Detail Sambungan)

See page 2 of 3

BASE METAL (Logam Dasar)

MATERIAL SPEC. (Spesifikasi Material) : Group I/II to Group I/II

TYPE OR GRADE (Tipe atau Kelas) : -

THICKNESS (Rentang Ketebalan Logam Dasar)

GROOVE : 3 ~ Unlimited FILLET : 3 ~ Unlimited

DIAMETER (PIPE) (Diameter Pipa) : ≥ 600 mm

ELECTRICAL CHARACTERISTIC (Karakteristik Elektrik)

TRANSFER MODE (GMAW) (Mode Transfer (GMAW))

☐ SHORT CIRCUITING ☐ GLOBULAR/FCAW

☐ SPRAY

CURRENT : ☐ AC ☑ DCEP ☐ DCEN ☐ PULSED

OTHER : N/A

TUNGSTEN ELECTRODE (GTAW)

SIZE (Ukuran) : N/A

TYPE (Tipe) : N/A

FILLER METAL (Logam Pengisi)

	SMAW
AWS SPECIFICATION (Spesifikasi AWS)	A5.1
AWS CLASSIFICATION (Klasifikasi AWS)	E7018-H4R Ø 2.5 3.2 4.0
BRAND NAME (Nama Merk)	-

SHIELDING (Pelindung)

	SMAW
FLUX (Flux)	N/A
GAS (Gas)	N/A
COMPOSITION (Komposisi)	N/A
ELECTRO - FLUX (CLASS) (Kelas Elektro Fluks)	NA
FLOW RATE (Laju Alir)	N/A
GAS CUP SIZE (Ukuran Nozzle Gas)	NA

TECHNIQUE (Teknik)

STRINGER OR WEAVE BEAD (Lurus atau Mengayun) : Stringer and/or weaving

MULTI PASS OR SINGLE PASS (PER SIDE) (Satu Pass atau Banyak Pass (Per Sisi)) : Multi or Single

NUMBER OF ELECTRODE (Jumlah Elektroda) : Single Electrode

ELECTRODE SPACING (Jarak antar Elektroda)

LONGITUDINAL : N/A

LATERAL : N/A

ANGLE : N/A

CONTACT TUBE TO WORK DISTANCE (Jarak kontak Tube ke Benda Kerja) : N/A

PEENING (Peening) : N/A

INTERPASS CLEANING (Pembersihan Antar Pass) : Grinding, Brushing, and Chipping

PREHEAT (Pemanasan Awal)

PREHEAT TEMP. MIN. (Temperatur Minimum Pemanasan Awal) : See Table Below

Thickness/T (mm)	≤ 20 mm	20mm < T ≤38mm	38 mm < T ≤ 65 mm	> 65 mm
Min. Temp (°C)	0	10	65	110

INTERPASS TEMP. MAX. (Temperatur Minimum Antar Pass) : 250°C

POSITION (Posisi)

POSITION OF GROOVE (Posisi Groove) : F, H, V, OH

POSITION OF FILLET (Posisi Fillet) : F, H, V, OH

VERTICAL PROGRESSION (Pergerakan Vertikal)

☑ UP ☐ DOWN

POST WELD HEAT TREATMENT (Pemanasan Pasca Las)

TEMPERATURE (Temperatur) : N/A

TIME (Waktu) : N/A

WELDING INSPECTOR TM MIGAS

Nomor Registrasi Migas

AYG - B- 569/0176/2026

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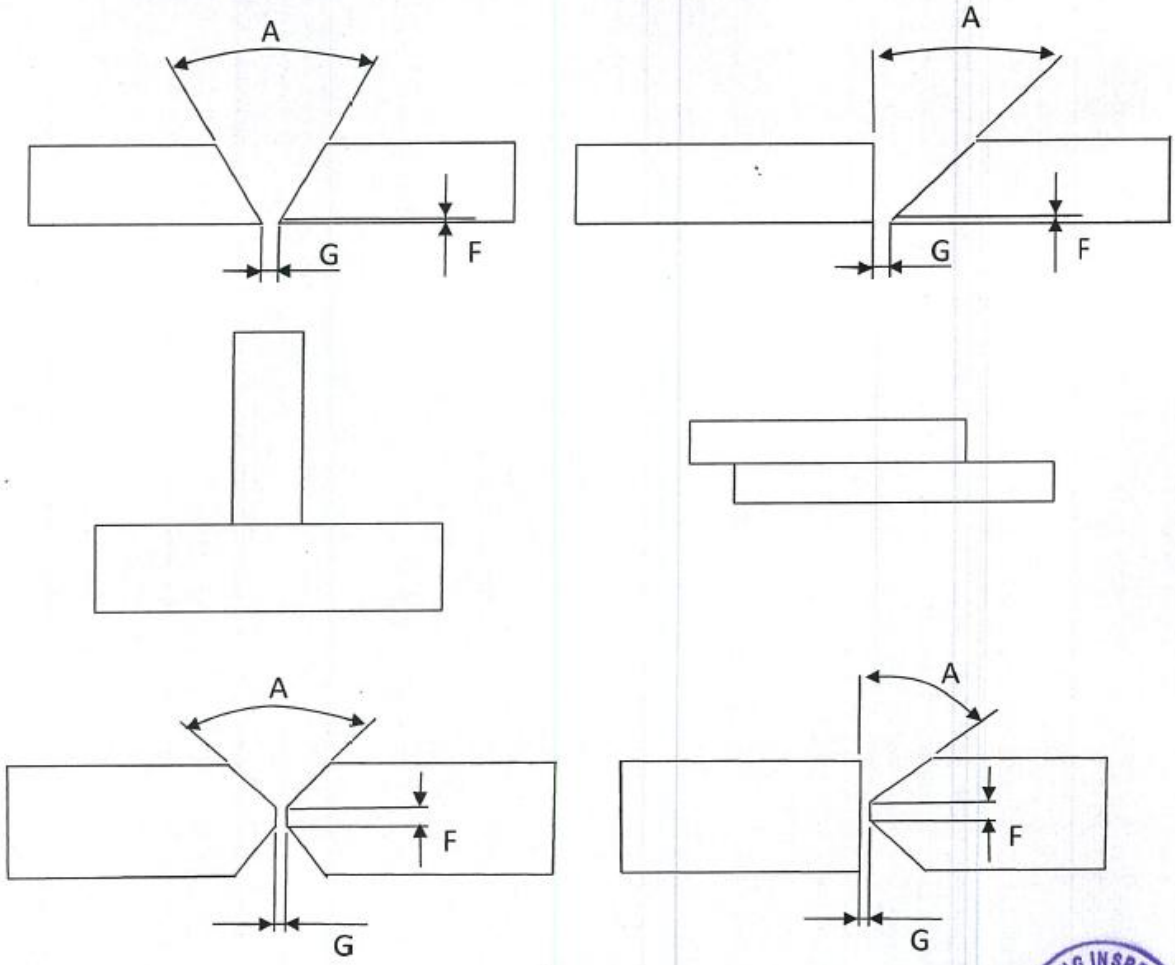
Banten, Indonesia (42414)
Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

WELDING PROCEDURE SPECIFICATION (WPS)

Applicable Code: AWS D1.1/1.1M: 2025, Structural Welding Code - Steel

Attachment of Joint Detail



A = 45° (+10, -5)
G =0 - 4 mm
F = 0 - 2 mm

WELDING INSPECTOR IM MIGAS
Nomor Registrasi Migas
AYG - B - 569 / 0176 / 2026

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Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

WELDING PROCEDURE SPECIFICATION (WPS)

Applicable Code: AWS D1.1/1.1M: 2025, Structural Welding Code - Steel

WPS No. : 01-WPS-HEI-AWS-MIGAS-26 Rev : 0

WELDING PARAMETER

PASS OR WELD LAYER(S)	PROCESS	FILLER METAL		CURRENT		VOLT (V)	TRAVEL SPEED (mm/MIN.)	Heat Input (KJ/mm)	REMARK
		AWS CLASS	DIA. (mm)	TYPE & POLARITY	AMP (A)				
FLAT AND HORIZONTAL									
Root/Hot	SMAW	E7018-H4R	2.5, 3.2, 4.0	DCEP	70 ~ 100	20 ~ 24	45 ~ 85	0,99 ~ 3,2	
Fill					110 ~ 150	22~ 27	65 ~ 120	1,1 ~ 3,74	
Cap					100 - 130	21~ 25	70 - 130	0,97 ~ 2,79	
VERTICAL									
Root/Hot	SMAW	E7018-H4R	2.5, 3.2, 4.0	DCEP	70 ~ 105	21 ~ 24	40 ~65	1,36 ~ 3,78	
Fill					110 ~ 150	22~ 27	65 ~ 120	1,1 ~ 3,74	
Cap					90 - 135	20~ 26	60- 120	0,9 ~ 3,51	
OVERHEAD									
Root/Hot	SMAW	E7018-H4R	2.5, 3.2, 4.0	DCEP	70 ~ 90	20 ~ 24	35 ~90	0,93 ~ 3,70	
Fill					105 ~ 130	22~ 25	50 ~ 100	1,39 ~ 3,9	
Cap					100 - 125	21~ 24	60- 100	1,26 ~ 3,13	

No.	DATE	PREPARED BY	REVIEWED BY	REGISTERED BY MIGAS
0	February 01, 2026	International Institute of Welding Personnel Qualification System IWE Andi Iskandar IIW-0481/IWE-0489 Issue date 01/12/2016 ANDI ISKANDAR	PT. HANAZONO Engineering Indonesia DEPARTMENT RUSNANDI	Nomor Registrasi Migas AYG-B-569/0176/2026 WELDING INSPECTOR IM MIGAS

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Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

PQR NO. (No.PQR) : 01A-PQR-HEI-AWS-MIGAS-26 DATE (Tanggal) : February 01, 2026 WPS NO. (No. WPS) : 01-WPS-HEI-AWS-MIGAS-26

REV NO. (No. Rev.) : 0 DATE (Tanggal) : -

WELDING PROCESS (ES) (Proses Pengelasan) : SMAW TYPE (S) (Tipe) : Manual

JOINTS DESIGN USED (Desain Sambungan yang Digunakan)

TYPE (Tipe) : Double V Groove

☐ SINGLE ☑ DOUBLE WELD

BACKING (Backing) : ☑ YES ☐ NO

BACKING MATERIAL (Material Backing) : Weld Metal

ROOT OPENING (Ukuran Celah Root) : 0 - 1 mm

ROOT FACE DIMENSION (Ukuran Pinggiran Root) : 1 mm

GROOVE ANGLE (Sudut Groove) : 45°

RADIUS (J-U) (Jari-Jari (J-U)) : NA

BACK GOUGING (Back Gouging) : ☐ YES ☑ NO

METHOD (Metode) : Grinding

BASE METAL (Logam Dasar)

MATERIAL SPEC. (Spesifikasi Material) : Grup I or II to Group I or II

TYPE OR GRADE (Tipe atau Kelas) : -

THICKNESS (Rentang Ketebalan Logam Dasar)

GROOVE : 25 mm FILLET : NA

DIAMETER (PIPE) (Diameter Pipa) : N/A

FILLER METAL (Logam Pengisi)

	SMAW
AWS SPECIFICATION (Spesifikasi AWS)	A5.1
AWS CLASSIFICATION (Klasifikasi AWS)	E7018-H4R
BRAND NAME (Nama merk)	Bohler

SHIELDING (Pelindung)

	SMAW
FLUX (Flux) : NA GAS (Gas)	NA
COMPOSITION (Komposisi)	NA
ELECTRO - FLUX (CLASS) (Kelas Elektro Fluks)	NA
FLOW RATE (Laju Alir)	NA
GAS CUP SIZE (Ukuran Nozzle Gas)	NA

PREHEAT (Pemanasan Awal)

PREHEAT TEMP. MIN. (Temperatur Minimum Pemanasan Awal) : 30 °C

INTERPASS TEMP. MAX. (Temperatur Maksimum Antar Pass) : 245 °C

POSITION (Posisi)

POSITION OF GROOVE (Posisi Groove) : 2G

POSITION OF FILLET (Posisi Fillet) : NA

VERTICAL PROGRESSION (Pergerakan Vertikal)

☐ UP ☐ DOWN

ELECTRICAL CHARACTERISTIC (Karakteristik Elektrik)

TRANSFER MODE (GMAW) (Mode Transfer (GMAW))

☐ SHORT CIRCUITING ☐ GLOBULAR/FCAW

☐ SPRAY

CURRENT : ☐ AC ☑ DCEP ☐ DCEN ☐ PULSED

POWER SOURCE : ☑ CC ☐ CV

OTHER : N/A

TUNGSTEN ELECTRODE (GTAW)

SIZE (Ukuran) : N/A

TYPE (Tipe) : N/A

TECHNIQUE (Teknik)

STRINGER OR WEAVE BEAD (Lurus atau Mengayun) : Stringer

MULTI PASS OR SINGLE PASS (PER SIDE) (Satu Pass atau Banyak Pass (Per Sisi)) : Multi Pass

NUMBER OF ELECTRODE (Jumlah Elektroda) : Single Electrode

ELECTRODE SPACING (Jarak antar Elektroda)

LONGITUDINAL : N/A

LATERAL : N/A

ANGLE : N/A

CONTACT TUBE TO WORK DISTANCE (Jarak kontak Tube ke Benda Kerja) : N/A

PEENING (Peening) : N/A

INTERPASS CLEANING (Pembersihan Antar Pass) : Grinding, brushing, and chipping

POST WELD HEAT TREATMENT (Pemanasan Pasca Las)

TEMPERATURE (Temperatur) : N/A

TIME (Waktu) : N/A

WELDING PROCEDURE

PASS OR WELD LAYER(S)	PROCESS	FILLER METAL		CURRENT		VOLTS (V)	TRAVEL SPEED (mm/Min)	HEAT INPUT (J/mm)	JOINT DETAILS
		CLASS	DIA.	TYPE & POLARITY	AMPS (A)				

See Page 2 of 3

WELDING INSPECTOR IM MIGAS

Nomor Registrasi Migas

AYG - B - 569 / 076 / 2026

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WELDING RECORD OF QUALIFICATION TEST

WELDING PROCESS : SMAW

WELDING POSITION : 2G

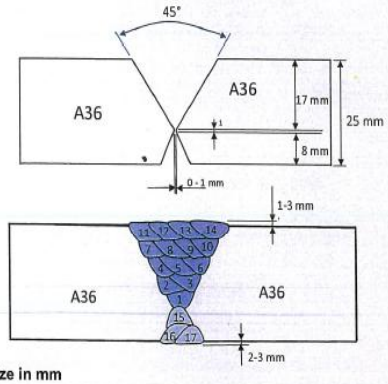
WPS NO. : 01-WPS-HEI-AWS-MIGAS-26

PQR NO. : 01A-PQR-HEI-AWS-MIGAS-26

Welding Date : January 20, 2026 (PAGE 2 of 3)

Pass	Filler Metal Type	Size	Polarity	Interpass Temp (°C)	AMP. (A)	VOLTT (V)	Welding Speed (mm/min)	Heat Input (J/mm)
1	E7018-H4R	Ø 3,2	DCEP	A.T (30)	65	22	63,29	1355,66
2	E7018-H4R	Ø 3.2	DCEP	87	70	22	61,73	1496,84
3	E7018-H4R	Ø 3.2	DCEP	104	75	23	70,42	1469,75
4	E7018-H4R	Ø 3.2	DCEP	121	125	25	76,59	2448,10
5	E7018-H4R	Ø 3.2	DCEP	154	125	25	79,01	2373,12
6	E7018-H4R	Ø 3.2	DCEP	188	125	25	72,16	2598,39
7	E7018-H4R	Ø 3.2	DCEP	224	130	25	110,41	1766,14
8	E7018-H4R	Ø 3.2	DCEP	245	125	25	120,69	1553,57
9	E7018-H4R	Ø 3.2	DCEP	68	130	25	100,86	1933,37
10	E7018-H4R	Ø 3.2	DCEP	112	132	25	110,41	1793,32
11	E7018-H4R	Ø 3.2	DCEP	129	120	23	140	1182,86
12	E7018-H4R	Ø 3.2	DCEP	154	122	23	145,83	1154,49
13	E7018-H4R	Ø 3.2	DCEP	172	122	23	138,34	1217,00
14	E7018-H4R	Ø 3.2	DCEP	191	122	23	125,45	1342,05
BACK SIDE (2G)								
15	E7018-H4R	Ø 3.2	DCEP	69	125	25	90,44	2073,20
16	E7018-H4R	Ø 3.2	DCEP	112	122	24	125,9	1395,39
17	E7018-H4R	Ø 3.2	DCEP	129	122	24	115,1	1526,32

Sketch for joint preparation and passes location



*size in mm

Kind Of Base Metal	:	A 36 to A 36
Filler Metal Trade Name (Maker)	:	E7018-H4R
Shielding Gas & Flow Rate	:	N/A
Stick Out	:	N/A
Torch Work Angle	:	N/A
Torch Travel Angle	:	N/A
Welder Name / ID	:	Juanda
* A.T	:	Ambient Temperature

Nomor Registrasi Migas
AYG-B-569/076/2016

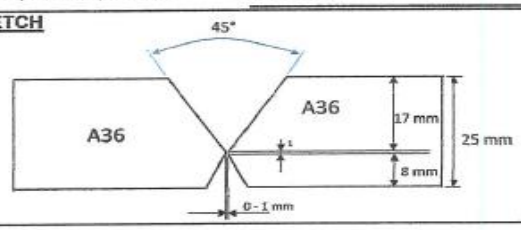
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

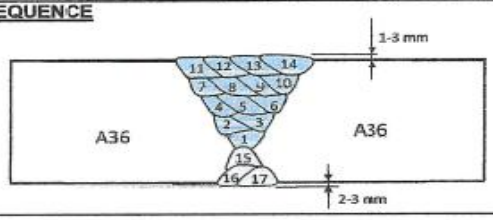
LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / JURU LAS / OPERATOR LAS

Nama Juru Las	: JUANDA	No. Ujian	: -
Perusahaan	: PT. HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI Cilegon	Tanggal Pengujian	: January 20, 2026
		WPS No.	: 01-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1:2025	Supporting PQR No.	: 01A-PQR-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 2G	Arah Pengelasan	: N/A
Jenis Bahan	: Carbon Steel Plate	Pabrik	: N/A
(Pipa/Pelat)	: A36		
Diameter	: N/A	Tebal Dinding	: 25 mm
		(Pipa/Pelat)	:
Jenis Bahan Pengisi	: E7018-H4R	Pabrik	: N/A
Panjang yang disambung	: 350 mm	Pembersih	: grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: DOUBLE V GROOVE	Sudut Kampuh	: 45°
Bukaan Las Muka	: 1-2 mm	Bukaan Muka Akar	: 0-1 mm
Tinggi Las Muka	: 1 - 2 mm	Tinggi Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: Backweld

SKETCH



SEQUENCE



No. Lapisan Pada Lasan	1	2	3	4	5	6	7
Jenis	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R
Ukuran Kawat Las (mm)	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Ampere, A	65	70	75	125	125	125	130
Volt, V	22	22	23	24	25	25	25
Mulai Mengelas	10.44	10.56	11.05	11.12	11.19	11.26	11.35
Selesai Mengelas	10.50	11.02	11.10	11.17	11.24	11.32	11.41
Durasi Waktu / Lapisan (min)	5,53	5,67	4,97	4,57	4,43	4,85	3,17
Kec.Pengelasan, mm/min	63,29	61,73	70,42	76,59	79,01	72,16	110,41
Heat Input, KJ/mm	1,36	1,50	1,47	2,35	2,37	2,60	1,77
Suhu Antar Sambungan °C	30	87	104	121	154	188	224
Selang Waktu Antara Lasan, min	6	3	2	2	2	3	30

No. Lapisan Pada Lasan	8	9	10	11	12	13	14
Jenis	E7108-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R
Ukuran Kawat Las (mm)	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Ampere, A	128	130	132	120	122	122	122
Volt, V	25	25	25	23	23	23	23
Mulai Mengelas	11.43	13.10	13.24	13.32	13.38	13.42	13.46
Selesai Mengelas	11.46	13.17	13.28	13.36	13.41	13.45	13.50
Durasi Waktu / Lapisan (min)	2,90	3,47	3,17	2,50	2,40	2,53	2,79
Kec.Pengelasan, mm/min	120,69	100,86	110,41	140,00	145,83	138,34	125,45
Heat Input, KJ/mm	1,59	1,93	1,79	1,18	1,15	1,22	1,34
Suhu Antar Sambungan °C	245	68	112	129	154	172	191
Selang Waktu Antara Lasan, min	84	7	4	2	1	1	27

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Banten, Indonesia (42414)
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e-mail : project@hanazono.co.id

PQR no : 01A-PQR-HEI-AWS-MIGAS-26

PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

TEST RESULT

TENSILE TEST

SPECIMEN NO.	WIDTH (mm)	THICKNESS (mm)	AREA (mm^2)	ULTIMATE TENSILE LOAD, kN	ULTIMATE UNIT STRESS, N/mm^2	CHARACTER OF FAILURE AND LOCATION
01A-PQR-HEI-AWS-MIGAS-26 -T1	20,52	24,54	503,56	256,78	510	Base Metal (Ductile)
01A-PQR-HEI-AWS-MIGAS-26 -T2	20,54	24,57	504,67	254,37	504	Base Metal (Ductile)

GUIDED BEND TEST

SPECIMEN NO.	TYPE OF BEND	RESULT	REMARK
01A-PQR-HEI-AWS-MIGAS-26-SB1	Side Bending	Accepted	Discontinuity 1.72 mm of opening was Observed
01A-PQR-HEI-AWS-MIGAS-26-SB2	Side Bending	Accepted	Discontinuity 0,54 mm of opening was Observed
01A-PQR-HEI-AWS-MIGAS-26-SB3	Side Bending	Accepted	No Open Discontinuity was Observed
01A-PQR-HEI-AWS-MIGAS-26-SB4	Side Bending	Accepted	Discontinuity 0,46 mm of opening was Observed

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMPERATURE (°C)	IMPACT VALUE (Joule)				REMARK
				1	2	3	Average	
N/A								
N/A								

HARDNESS TEST

	Type:	Maximum acceptable value:
N/A	LINE	Obtained Values
	1	NA
	2	NA
	3	NA

MACROETCH TEST : N/A

APPEARANCE : Good
UNDERCUT : No
PIPING POROSITY : N/A
CONVEXITY : N/A
TEST DATE : January 20, 2026
WITNESSED BY :

RT REPORT NO. : KIM-HEI-RT-01 RESULT : Passed
UT REPORT NO. : N/A RESULT : N/A

FILLET WELD TEST RESULTS

MINIMUM SIZE MULTIPASS MACROETCH		MAXIMUM SIZE MULTIPASS MACROETCH	
1. N/A	3. N/A	1. N/A	3. N/A
2. N/A		2. N/A	

OTHER TEST

ALL-WELD-METAL TENSION TEST
TENSILE STRENGTH, PSI : N/A
YIELD POINT/STRENGTH, PSI : N/A
ELONGATION IN 2 IN., % : N/A
LABORATORY TEST NO. : HT/JKT/0126/0260

WELDER'S NAME : JUANDA
TESTS CONDUCTED BY : PT. Hi-Test Laboratory

CLOCK NO. : NA STAMP NO. : JH-1006
LABORATORY : PT. Hi-Test - Tangerang
TEST NUMBER : 01A-PQR-HEI-AWS-MIGAS-26
PER : Hadi Anwar

WE, THE UNDERSIGNED, CERTIFY THAT THE STATEMENTS IN THIS RECORD ARE CORRECT AND THAT THE TEST WELDS WERE PREPARED, WELDED, AND TESTED IN CONFORMANCE WITH THE REQUIREMENTS OF SECTION 6 OF AWS D1.1/D1.1M:2025 STRUCTURAL WELDING CODE - STEEL.

REV NO.	DATE	Prepared by	Reviewed by	Registered by MIGAS
0	February 01, 2026	International Institute of Welding IWE Andi Iskandar ID/001/IWE-0489 ANDI ISKANDAR	PT. HANAZONO Engineering Indonesia DEPARTMENT RUSNANDI	WELDING INSPECTOR IM Nomor Registrasi Migas AYG-B-569/0126/2026

No. Lapisan Pada Lasan	15	16	17				
Jenis Ukuran Kawat Las (mm)	E7108-H4R 3,2	E7018-H4R 3,2	E7018-H4R 3,2				
Ampere, A	125	122	122				
Volt, V	25	24	24				
Mulai Mengelas	14.17	14.25	14.33				
Selesai Mengelas	14.22	14.29	14.39				
Durasi Waktu / Lapisan (min)	3,87	2,78	3,03				
Kec.Pengelasan, mm/min	90,44	125,90	115,51				
Heat Input, KJ/mm	2,07	1,40	1,52				
Suhu Antar Sambungan °C	68	112	129				
Selang Waktu Antara Lasan, min	3	2					

PENGUJIAN VISUAL :

BENTUK CACAT LAS	LOKASI	UKURAN	KETERANGAN
None	None	None	None

MACAM CACAT : None

HASIL UJIAN VISUAL : Accepted

PENGUJIAN TIDAK RUSAK : RT

HASIL UJI	NO. LAPORAN	TANGGAL
RT : Lulus/ ~~Tidak Lulus~~	KIM-HEI-RT-01	January 22, 2026
UT : Lulus/ Tidak Lulus	N/A	N/A
PT : Lulus/ Tidak Lulus	N/A	N/A

HASIL UJI TIDAK MERUSAK : Accepted

PENGUJIAN MERUSAK : Side Bend 4 ea, Tensile Test 2 ea

TENSILE TEST

NO. BATANG UJI	UKURAN		LUAS (mm^2)	BEBAN MAKSIMUM (kN)	KUAT TARIK kgf/mm^2 (Mpa)	SIFAT CACAT DAN LOKASI
	LEBAR (mm)	TEBAL (mm)				
TENSION - 1	20.52	24.54	503.56	256.78	510	Ductile; Base Metal
TENSION - 2	20.54	24.57	504.67	254.37	504	Ductile; Base Metal

NICK BREAK TEST

NO. BATANG UJI	CACAT	
	UKURAN (mm)	HASIL UJI
NICK BREAK - 1	N/A	
NICK BREAK - 2	N/A	

BENDING TEST

NO. BATANG UJI	CACAT	
	UKURAN (mm)	HASIL UJI
SB1	150 mm x 10 mm	Accepted
SB2	150 mm x 10 mm	Accepted
SB3	150 mm x 10 mm	Accepted
SB4	150 mm x 10 mm	Accepted

HASIL PENGUJIAN MERUSAK : "LULUS" Laporan pengujian : HT/JKT/0126/0260

DISIAPKAN OLEH QC	DIPERIKSA OLEH IWE	DIREVIEW OLEH QA/QC	DISETUJUI OLEH,
PT. ISTEK	**PT. ISTEK**	**PT HEI**	**MIGAS**
(Ferdi)	(Andi Iskandar)	(Rusnandi)	(Puji Trijatmiko)
23-Jan-26	23-Jan-26	23-Jan-26	

PT. HANAZONO Engineering Indonesia DEPARTEMENT QC

RADIOGRAPHY TEST REPORT

PT. KOSTEC INDONESIA MANDIRI

Office : Lingkar Selatan Street (Opposite Horison Hotel)
RT 005 / RW.002 Desa Harjatani Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : Fax : (0254) 781 - 4752

Report No. : KIM-HEI-RT-01
Inspection Date : 21 Januari 2026
Report Date : 22 Januari 2026
Page No. : 1 Of 1

Customer	: PT. HANAZONO ENGINEERINBG INDONESIA	Item Name	: PLATE
Project	: pWPS	DWG. No.	: - Rev. No 0
Applied Spec.	: AWS D1.1	Procedure No.	: KIM-NDE-AWS-RTP-02 Rev. No. 0
Base Material Type	: A-36 to A-36; Plate ☑ PIPE ☐	Diameter (OD)	: - TO - ☑ mm
		Weld Reinforcement Thickness	: 2 ☐ inch
Base Material Thickness	: 25 to 25 ☑ mm ☐ inch	Weld Thickness	: 25 ☑ mm ☐ inch
Item Type	☑ Welding ☐ Casting	Welding Process	: ☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

γ-Ray		X-Ray	
Type	Sentinel ☑ Ir-192 ☐ Co-60	Manufacturer	:
Serial No.	HCD743	Serial No.	:
Curie	34 Ci	kV	mA
Source Size	3 x 3 mm 3	Focal Size	x ☐ mm

Film Brand	☐ CARESTREAM ☑ AGFA	TYPE ☐ D4 ☑ D7	FILM SIZE ☐ 4X610Inch ☑ 4X15 Inch
Screen	☑ Lead ☐ Fluorescent	Front 0.125 ☑ mm	Back 0.125 ☐ inch
IQI Type	☑ ASTM ☐ KS(JIS) ☐ MIL	ID No. ☐ 1A ☐ 1C ☑ 1B ☐ 1D	IQI Placement ☐ Source Side ☑ Film Side
Source to Object Distance	406 ☑ mm ☐ inch	Exporsure Time	10 Second
Distance from Source side of object to film	381 ☑ mm ☐ inch		
Set up	Exposure ☑ Single-wall exposure ☐ Double-wall exposure		
	Viewing ☑ Single-wall viewing ☐ Double-wall viewing		Ug = 0.5
Development	Temperature 20°C	Developing Time 3 Minutes	Film Density = 2 ~ 4

Sketch

☑ A ☐ B ☐ C ☐ D ☐ E ☐ F

Identification No.	GRADE	RESULT		Type of Defect												Welder Stamp	Remarks
		ACCEPT	REJECT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT		
JUANDA 01-WPS-HEI-AWS-MIGAS-26	A-B	PASS	-													JH-1006	

	Interpreted By	Reviewed/ Evaluated By	Reviewed By	Client Representative
Name		Rusmanto	A. RIZKI M.	
Designation	PCN RFI Level 2	PT Hanazono	JSC	
Signature	Slamet Adi	PT. HEI		
Date	22/01/2026	22/ Jan / 2026	22 Jan 26	

NOTE :
① P : Porosity
② S : Slag Inclusion
③ IP : Incomplete Penetrat
④ LF : Lack of Fusion
⑤ TI : Tungsten Inclusion
⑥ UC : Undercut
⑦ SD : Surface Defect
⑧ RC : Root Concavity
⑨ BT : Burn-Through
⑩ C : Crack
⑪ SI : Surface Indicater
⑫ OT : Others

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PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

Page 1 of 2

PQR NO. (No.PQR) : 01B-PQR-HEI-AWS-MIGAS-26 DATE (Tanggal) : February 01, 2026 WPS NO. (No. WPS) : 01-WPS-HEI-AWS-MIGAS-26
REV NO. (No. Rev.) : 0 DATE (Tanggal) : -
WELDING PROCESS (ES) (Proses Pengelasan) : SMAW TYPE (S) (Tipe) : Manual

JOINTS DESIGN USED (Desain Sambungan yang Digunakan)

TYPE (Tipe) : Double V Groove
☐ SINGLE ☑ DOUBLE WELD
BACKING (Backing) : ☑ YES ☐ NO
BACKING MATERIAL (Material Backing) : Weld Metal
ROOT OPENING (Ukuran Celah Root) : 0 - 1 mm
ROOT FACE DIMENSION (Ukuran Pinggiran Root) : 1 mm
GROOVE ANGLE (Sudut Groove) : 45°
RADIUS (J-U) (Jari-Jari (J-U)) : NA
BACK GOUGING (Back Gouging) : ☐ YES ☑ NO
METHOD (Metode) : Grinding

POSITION (Posisi)

POSITION OF GROOVE (Posisi Groove) : 3G
POSITION OF FILLET (Posisi Fillet) : NA
VERTICAL PROGRESSION (Pergerakan Vertikal)
☑ UP ☐ DOWN

ELECTRICAL CHARACTERISTIC (Karakteristik Elektrik)

TRANSFER MODE (GMAW) (Mode Transfer (GMAW))
☐ SHORT CIRCUITING ☐ GLOBULAR/FCAW
☐ SPRAY
CURRENT : ☐ AC ☑ DCEP ☐ DCEN ☐ PULSED
POWER SOURCE : ☑ CC ☐ CV
OTHER : N/A
TUNGSTEN ELECTRODE (GTAW)
SIZE (Ukuran) : N/A
TYPE (Tipe) : N/A

BASE METAL (Logam Dasar)

MATERIAL SPEC. (Spesifikasi Material) : A36 to A36
TYPE OR GRADE (Tipe atau Kelas) : -
THICKNESS (Rentang Ketebalan Logam Dasar)
GROOVE : 25 mm FILLET : NA
DIAMETER (PIPE) (Diameter Pipa) : N/A

TECHNIQUE (Teknik)

STRINGER OR WEAVE BEAD (Lurus atau Mengayun) : Weave
MULTI PASS OR SINGLE PASS (PER SIDE) (Satu Pass atau Banyak Pass (Per Sisi)) : Multi Pass
NUMBER OF ELECTRODE (Jumlah Elektroda) : Single Electrode
ELECTRODE SPACING (Jarak antar Elektroda)
LONGITUDINAL : N/A
LATERAL : N/A
ANGLE : N/A
CONTACT TUBE TO WORK DISTANCE (Jarak kontak Tube ke Benda Kerja) : N/A
PEENING (Peening) : N/A
INTERPASS CLEANING (Pembersihan Antar Pass) : Grinding, brushing, and chipping

FILLER METAL (Logam Pergisi)

	SMAW
AWS SPECIFICATION (Spesifikasi AWS)	A5.1
AWS CLASSIFICATION (Klasifikasi AWS)	E7018-H4R
BRAND NAME (Nama merk)	Bohler

SHIELDING (Pelindung)

	SMAW
FLUX (Flux) : NA GAS (Gas)	NA
COMPOSITION (Komposisi)	NA
ELECTRO - FLUX (CLASS) (Kelas Elektro Fluks)	NA
FLOW RATE (Laju Alir)	NA
GAS CUP SIZE (Ukuran Nozzle Gas)	NA

PREHEAT (Pemanasan Awal)

PREHEAT TEMP. MIN. (Temperatur Minimum Pemanasan Awal) : 30 °C
INTERPASS TEMP. MAX. (Temperatur Maksimum Antar Pass) : 245 °C

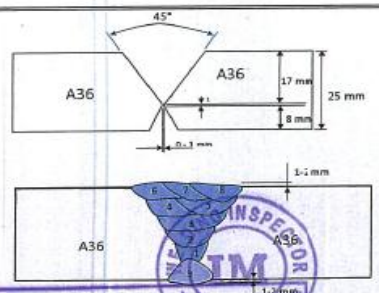
POST WELD HEAT TREATMENT (Pemanasan Pasca Las)

TEMPERATURE (Temperatur) : N/A
TIME (Waktu) : N/A

WELDING PROCEDURE

PASS OR WELD LAYER(S)	PROCESS	FILLER METAL CLASS	FILLER METAL DIA.	CURRENT TYPE & POLARITY	CURRENT AMPS (A)	VOLTS (V)	TRAVEL SPEED (mm/Min)	HEAT INPUT (J/mm)
1	SMAW	E7018-H4R	3,2	DCEP	74	22	45,34	2.154
2			3,2		145	23	56,18	3.562
3			3,2		145	24	57,1	3.657
4			3,2		142	24	60,87	3.359
5			3,2		148	25	60,03	3.698
6			3,2		110	22	67,57	2.149
7			3,2		110	22	67,7	2.145
8			3,2		108	22	74	1.926
Back side								
9	SMAW	E7018-H4R	3,2	DCEP	105	22	88,16	[illegible]

JOINT DETAILS



Nomor Registrasi Migas
AYG - B - 569/0176/2026

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PQR no : 01B-PQR-HEI-AWS-MIGAS-26

PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

TEST RESULT

TENSILE TEST

SPECIMEN NO.	WIDTH (mm)	THICKNESS (mm)	AREA (mm^2)	ULTIMATE TENSILE LOAD, kN	ULTIMATE UNIT STRESS, N/mm^2	CHARACTER OF FAILURE AND LOCATION
01B-PQR-HEI-AWS-MIGAS-26 -T1	20,47	24,58	503,15	252,01	501	Base Metal
01B-PQR-HEI-AWS-MIGAS-26 -T2	20,42	24,61	502,54	252,1	502	Base Metal

GUIDED BEND TEST

SPECIMEN NO.	TYPE OF BEND	RESULT	REMARK
01B-PQR-HEI-AWS-MIGAS-26-SB1	Side Bending	Accepted	No Open Discontinuity was Observed
01B-PQR-HEI-AWS-MIGAS-26-SB2	Side Bending	Accepted	Discontinuity 0,61 mm of Opening was Observed
01B-PQR-HEI-AWS-MIGAS-26-SB3	Side Bending	Accepted	No Open Discontinuity was Observed
01B-PQR-HEI-AWS-MIGAS-26-SB4	Side Bending	Accepted	No Open Discontinuity was Observed

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMPERATURE (°C)	IMPACT VALUE (Joule)				REMARK
				1	2	3	Average	
N/A								
N/A								

HARDNESS TEST

	Type:	Maximum acceptable value:
N/A	LINE	Obtained Values
	1	NA
	2	NA
	3	NA

MACROETCH TEST : N/A

APPEARANCE : Good
UNDERCUT : No
PIPING POROSITY : N/A
CONVEXITY : N/A
TEST DATE : January 20, 2026
WITNESSED BY :

RT REPORT NO. : KIM-HEI-RT-02 RESULT : Passed
UT REPORT NO. : N/A RESULT : N/A

FILLET WELD TEST RESULTS

MINIMUM SIZE MULTIPASS MACROETCH		MAXIMUM SIZE MULTIPASS MACROETCH	
1. N/A	3. N/A	1. N/A	3. N/A
2. N/A		2. N/A	

OTHER TEST

ALL-WELD-METAL TENSION TEST
TENSILE STRENGTH, PSI : N/A
YIELD POINT/STRENGTH, PSI : N/A
ELONGATION IN 2 IN., % : N/A
LABORATORY TEST NO. : HT/JKT/0126/0261
CLOCK NO. : NA STAMP NO. : SR-0904

WELDER'S NAME : SAHRUL
TESTS CONDUCTED BY : PT. Hi-Test Laboratory
LABORATORY : PT. Hi-Test - Tangerang
TEST NUMBER : 01B-PQR-HEI-AWS-MIGAS-26
PER : Hadi Anwar

WE, THE UNDERSIGNED, CERTIFY THAT THE STATEMENTS IN THIS RECORD ARE CORRECT AND THAT THE TEST WELDS WERE PREPARED, WELDED, AND TESTED IN CONFORMANCE WITH THE REQUIREMENTS OF SECTION 6 OF AWS D1.1/D1.1M:2025 STRUCTURAL WELDING CODE - STEEL.

REV NO.	DATE	Prepared by	Reviewed by	Registered by MIGAS
0	February 01, 2026	International Institute of Welding IWE Andi Iskandar IW/064/IWE-0489 Issue date 01/12/2016 Personnel Certification System ANDI ISKANDAR	PT. HANAZONO Engineering Indonesia Quality Control Department RUSNANDI	WELDING INSPECTOR IM MIGAS Nomor Registrasi Migas AYG - B - 569/0176/2026

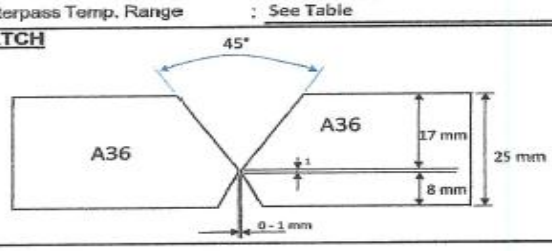
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

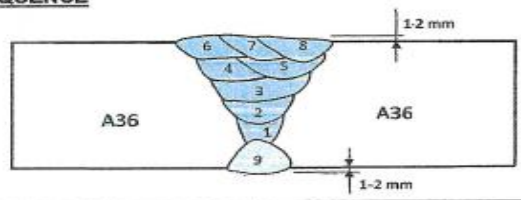
LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / JURU LAS / OPERATOR LAS

Nama Juru Las	: SAHRUL	No. Ujian	: -
Perusahaan	: PT. HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI Cilegon	Tanggal Pengujian	: January 20, 2026
		WPS No.	: 01-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1:2025	Supporting PQR No.	: 01B-PQR-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 3G	Arah Pengelasan	: Uphill
Jenis Bahan	: Carbon Steel Plate	Pabrik	: N/A
(Pipa/Pelat)	: A36		
Diameter	: N/A	Tebal Dinding	: 25 mm
		(Pipa/Pelat)	:
Jenis Bahan Pengisi	:	Pabrik	: N/A
Panjang yang disambung	: 350 mm	Pembersih	: grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerorgan	: DOUBLE V GROOVE	Sudut Kampuh	: 45°
Bukaan Las Muka	: 1-2 mm	Bukaan Muka Akar	: 0-1 mm
Tinggi Las Muka	: 1 - 2 mm	Tinggi Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: Backweld

SKETCH



SEQUENCE



No. Lapisan Pada Lasan	1	2	3	4	5	6	7
Jenis	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R
Ukuran Kawat Las (mm)	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Ampere, A	74	145	145	142	148	110	110
Volt, V	22	23	24	24	25	22	22
Mulai Mengelas	11.00	11.15	11.27	11.37	13.05	13.21	13.31
Selesai Mengelas	11.11	11.23	11.35	11.46	13.19	13.28	13.37
Durasi Waktu / Lapisan (min)	7,72	6,23	6,13	5,75	5,83	5,18	5,17
Kec.Pengelasan, mm/min	45,34	56,18	57,10	60,87	60,03	67,57	67,70
Heat Input, KJ/mm	2,15	3,56	3,66	3,36	3,70	2,15	2,14
Suhu Antar Sambungan °C	30	87	104	121	154	188	224
Selang Waktu Antara Lasan, min	4	4	2	79	2	3	5

No. Lapisan Pada Lasan	8	9					
Jenis	E7018-H4R	E7018-H4R					
Ukuran Kawat Las (mm)	3,2	3,2					
Ampere, A	108	105					
Volt, V	22	22					
Mulai Mengelas	13.42	14.20					
Selesai Mengelas	13.50	14.30					
Durasi Waktu / Lapisan (min)	4,73	3,97					
Kec.Pengelasan, mm/min	74,00	88,16					
Heat Input, KJ/mm	1,93	1,57					
Suhu Antar Sambungan °C	245	68					
Selang Waktu Antara Lasan, min	30						

RADIOGRAPHY TEST REPORT

PT. KOSTEC INDONESIA MANDIRI

Office : Lingkar Selatan Street (Opposite Horison Hotel) RT 005 / RW.002 Desa Harjatan Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : Fax : (0254) 781 - 4752

Report No. : KIM-HEI-RT-02
Inspection Date : 21 Januari 2026
Report Date : 22 Januari 2026
Page No. : 1 Of 1

Customer : PT. HANAZONO ENGINEERINBG INDONESIA
Project : PWPS
Applied Spec. : AWS D1.1
Item Name : PLATE
DWG. No. : -
Rev. No. 0
Procedure No. : KIM-NDE-AWS-RTP-02
Rev. No. 0

Base Material Type : A-36 Plate ☑ to A-36 PIPE ☐
Diameter (OD) : - TO - ☑ mm ☐ inch
Weld Reinforcement Thickness : 2
Base Material Thickness : 25 to 25 ☑ mm ☐ inch
Weld Thickness : 25 ☑ mm ☐ inch
Item Type ☑ Welding ☐ Casting
Welding Process : ☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

γ-Ray
Type Sentinel ☑ Ir-192 ☐ Co-60
Serial No. HCD743
Curie 34 Ci
Source Size 3 x 3 mm 3

X-Ray
Manufacturer :
Serial No. :
kV mA
Focal Size x ☐ mm

Film Brand ☐ CARESTREAM ☑ AGFA
TYPE ☐ D4 ☑ D7
FILM SIZE ☐ 4X610Inch ☑ 4X15 Inch
Screen ☑ Lead ☐ Fluorescent
Front 0.125 ☑ mm
Back 0.125 ☐ inch
IQI Type ☑ ASTM ☐ KS(JIS) ☐ MIL
ID No. ☐ 1A ☐ 1C ☑ 1B ☐ 1D
IQI Placement ☐ Source Sice ☑ Film Side
Source to Object Distance 406 ☑ mm ☐ inch
Distance from Source side of object to film 381 ☑ mm ☐ inch
Exposure Time 10 Second
Set up
Exposure ☑ Single-wall exposure ☐ Double-wall exposure
Viewing ☑ Single-wall viewing ☐ Double-wall viewing
Ug = 0.5
Development
Temperature 20°C
Developing Time 3 Minutes
Film Density = 2 ~ 4

Sketch
☑ A ☐ B ☐ C ☐ D ☐ E ☐ F

Identification No.	GRADE	RESULT ACCEPT	RESULT REJECT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT	Welder Stamp	Remarks
SAHRUL 01-WPS-HEI-AWS-MIGAS-26	A-B	PASS	-	✓												SR-0904	P=2mm

	Interpreted By	Evaluated By	Reviewed By	Client Representative
Name		Rustono	A. RIZKI M.	
Designation	CPCN RFI Level 2	PT. Hanazono U.	JGC	
Signature	Slamet			
Date	22/01/2026	22/Jan/2026	22 Jan 2026	

NOTE :
① P : Porosity
② S : Slag Inclusion
③ IP : Incomplete Penetrat
④ LF : Lack of Fusion
⑤ TI : Tungsten Inclusion
⑥ UC : Undercut
⑦ SD : Surface Defect
⑧ RC : Root Concavity
⑨ BT : Burn-Through
⑩ C : Crack
⑪ SI : Surface Indicater
⑫ OT : Others

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Head Office : Jl. Raya Bojonegara-Serdang No. 44 RT. 001/RW.001
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Banten, Indonesia (42414)
Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

Page 1 of 2

PQR NO. (No.PQR) : 01C-PQR-HEI-AWS-MIGAS-26 DATE (Tanggal) : February 01, 2026 WPS NO. (No. WPS) : 01-WPS-HEI-AWS-MIGAS-26
REV NO. (No. Rev.) : 0 DATE (Tanggal) : -
WELDING PROCESS (ES) (Proses Pengelasan) : SMAW TYPE (S) (Tipe) : Manual

JOINTS DESIGN USED (Desain Sambungan yang Digunakan)

TYPE (Tipe) : Double V Groove
☐ SINGLE ☑ DOUBLE WELD
BACKING (Backing) : ☑ YES ☐ NO
BACKING MATERIAL (Material Backing) : Weld Metal
ROOT OPENING (Ukuran Celah Root) : 0 - 1 mm
ROOT FACE DIMENSION (Ukuran Pinggiran Root) : 1 mm
GROOVE ANGLE (Sudut Groove) : 45°
RADIUS (J-U) (Jari-Jari (J-U)) : NA
BACK GOUGING (Back Gouging) : ☐ YES ☑ NO
METHOD (Metode) : Grinding

POSITION (Posisi)

POSITION OF GROOVE (Posisi Groove) : 4G
POSITION OF FILLET (Posisi Fillet) : NA
VERTICAL PROGRESSION (Pergerakan Vertikal)
☐ UP ☐ DOWN

ELECTRICAL CHARACTERISTIC (Karakteristik Elektrik)

TRANSFER MODE (GMAW) (Mode Transfer (GMAW))
☐ SHORT CIRCUITING ☐ GLOBULAR/FCAW
☐ SPRAY
CURRENT : ☐ AC ☑ DCEP ☐ DCEN ☐ PULSED
POWER SOURCE : ☑ CC ☐ CV
OTHER : N/A
TUNGSTEN ELECTRODE (GTAW)
SIZE (Ukuran) : N/A
TYPE (Tipe) : N/A

BASE METAL (Logam Dasar)

MATERIAL SPEC. (Spesifikasi Material) : A36 to A36
TYPE OR GRADE (Tipe atau Kelas) : -
THICKNESS (Rentang Ketebalan Logam Dasar)
GROOVE : 25 mm FILLET : NA
DIAMETER (PIPE) (Diameter Pipa) : N/A

TECHNIQUE (Teknik)

STRINGER OR WEAVE BEAD (Lurus atau Mengayun) : Weave
MULTI PASS OR SINGLE PASS (PER SIDE) (Satu Pass atau Banyak Pass (Per Sisi)) : Multi Pass
NUMBER OF ELECTRODE (Jumlah Elektroda) : Single Electrode
ELECTRODE SPACING (Jarak antar Elektroda)
LONGITUDINAL : N/A
LATERAL : N/A
ANGLE : N/A
CONTACT TUBE TO WORK DISTANCE (Jarak kontak Tube ke Benda Kerja) : N/A
PEENING (Peening) : N/A
INTERPASS CLEANING (Pembersihan Antar Pass) : Grinding, brushing, and chipping

FILLER METAL (Logam Pengisi)

	SMAW
AWS SPECIFICATION (Spesifikasi AWS)	A5.1
AWS CLASSIFICATION (Klasifikasi AWS)	E7018-H4R
BRAND NAME (Nama merk)	Bohler

SHIELDING (Pelindung)

	SMAW
FLUX (Flux) : NA GAS (Gas)	NA
COMPOSITION (Komposisi)	NA
ELECTRO - FLUX (CLASS) (Kelas Elektro Fluks)	NA
FLOW RATE (Laju Alir)	NA
GAS CUP SIZE (Ukuran Nozzle Gas)	NA

PREHEAT (Pemanasan Awal)

PREHEAT TEMP. MIN. (Temperatur Minimum Pemanasan Awal) : 31 °C
INTERPASS TEMP. MAX. (Temperatur Maksimum Antar Pass) : 243 °C

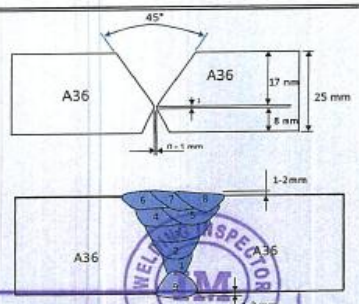
POST WELD HEAT TREATMENT (Pemanasan Pasca Las)

TEMPERATURE (Temperatur) : N/A
TIME (Waktu) : N/A

WELDING PROCEDURE

PASS OR WELD LAYER(S)	PROCESS	FILLER METAL CLASS	FILLER METAL DIA.	CURRENT TYPE & POLARITY	CURRENT AMPS (A)	VOLTS (V)	TRAVEL SPEED (mm/Min)	HEAT INPUT (J/mm)
1	SMAW	E7018-H4R	3,2	DCEP	80	22	31,47	3.356
2			3,2		108	22	43,83	3.253
3			3,2		120	25	54,31	3.314
4			3,2		118	25	46,71	3.789
5			3,2		120	25	47,82	3.764
6			3,2		112	23	83,23	1.857
7			3,2		114	23	76,71	2.051
8			3,2		115	23	81,32	1.952
Back side								
9	SMAW	E7018-H4R	3,2	DCEP	115	23	79,91	1.986

JOINT DETAILS



Nomor Registrasi Migas
AYG-B-569/0196/2026

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Banten, Indonesia (42414)
Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

PQR no : 01C-PQR-HEI-AWS-MIGAS-26

PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

TEST RESULT

TENSILE TEST

SPECIMEN NO.	WIDTH (mm)	THICKNESS (mm)	AREA (mm^2)	ULTIMATE TENSILE LOAD, kN	ULTIMATE UNIT STRESS, N/mm^2	CHARACTER OF FAILURE AND LOCATION
01C-PQR-HEI-AWS-MIGAS-26 -T1	20,48	24,56	502,99	255,67	508	Base Metal
01C-PQR-HEI-AWS-MIGAS-26 -T2	20,52	24,6	504,79	257,11	509	Base Metal

GUIDED BEND TEST

SPECIMEN NO.	TYPE OF BEND	RESULT	REMARK
01C-PQR-HEI-AWS-MIGAS-26 -SB1	Side Bending	Accepted	Discontinuity 1,34 mm of Opening was Observed
01C-PQR-HEI-AWS-MIGAS-26 -SB2	Side Bending	Accepted	Discontinuity0,44 mm of Opening was Observed
01C-PQR-HEI-AWS-MIGAS-26 -SB3	Side Bending	Accepted	Discontinuity 0,27 mm of Opening was Observed
01C-PQR-HEI-AWS-MIGAS-26 -SB4	Side Bending	Accepted	Discontinuity 0,51mm of Opening was Observed

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMPERATURE (°C)	IMPACT VALUE (Joule)				REMARK
				1	2	3	Average	
N/A								
N/A								

HARDNESS TEST

	Type:	Maximum acceptable value:
N/A	LINE	Obtained Values
	1	NA
	2	NA
	3	NA

MACROETCH TEST : N/A

APPEARANCE : Good
UNDERCUT : No
PIPING POROSITY : N/A
CONVEXITY : N/A
TEST DATE : January 20, 2026
WITNESSED BY :

RT REPORT NO. : KIM-HEI-RT-03 RESULT : Passed
UT REPORT NO. : N/A RESULT : N/A

FILLET WELD TEST RESULTS

MINIMUM SIZE MULTIPASS MACROETCH		MAXIMUM SIZE MULTIPASS MACROETCH	
1. N/A	3. N/A	1. N/A	3. N/A
2. N/A		2. N/A	

OTHER TEST

ALL-WELD-METAL TENSION TEST
TENSILE STRENGTH, PSI : N/A
YIELD POINT/STRENGTH, PSI : N/A
ELONGATION IN 2 IN., % : N/A
LABORATORY TEST NO. : HT/JKT/0126/0262
CLOCK NO. : NA STAMP NO. : RM-0815

WELDER'S NAME : ROMLI
TESTS CONDUCTED BY : PT. Hi-Test Laboratory LABORATORY : PT. Hi-Test - Tangerang
TEST NUMBER : 01C-PQR-HEI-AWS-MIGAS-26
PER : Hadi Anwar

WE, THE UNDERSIGNED, CERTIFY THAT THE STATEMENTS IN THIS RECORD ARE CORRECT AND THAT THE TEST WELDS WERE PREPARED, WELDED, AND TESTED IN CONFORMANCE WITH THE REQUIREMENTS OF SECTION 6 OF AWS D1.1/D1.1M:2025 STRUCTURAL WELDING CODE - STEEL.

REV NO.	DATE	Prepared by	Reviewed by	Registered by MIGAS
0	February 01, 2026	ANDI ISKANDAR	RUSNANDI	Nomor Registrasi Migas AYG-B-569/0176/2026

International Institute of Welding IWE Andi Iskandar ID/001/IWE-0489 Issue date 01/12/2016 Personnel Certification System

PT. HANAZONO Engineering Indonesia DEPARTMENT

WELDING INSPECTOR IM MIGAS

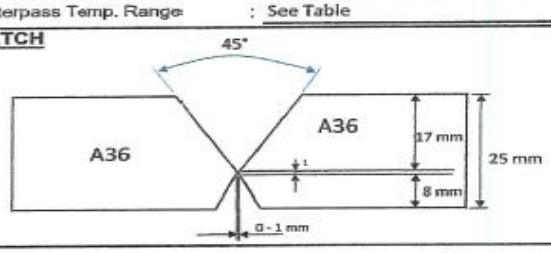
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

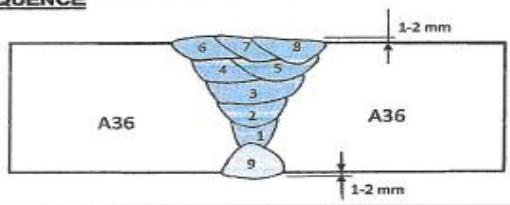
LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / ~~JURU LAS~~ / ~~OPERATOR LAS~~

Nama Juru Las	: ROMLI	No. Ujian	: -
Perusahaan	: PT. HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI Cilegon	Tanggal Pengujian	: January 20, 2026
		WPS No.	: 01-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1:2025	Supporting PQR No.	: 01C-PQR-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 4G	Arah Pengelasan	: N/A
Jenis Bahan	: Carbon Steel Plate	Pabrik	: N/A
(Pipa/Pelat)	: A36		
Diameter	: N/A	Tebal Dinding	: 25 mm
		(Pipa/Pelat)	:
Jenis Bahan Pengisi	: -	Pabrik	: N/A
Panjang yang disambung	: 350 mm	Pembersih	: grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: DOUBLE V GROOVE	Sudut Kampuh	: 45°
Bukaan Las Muka	: 1-2 mm	Bukaan Muka Akar	: 0-1 mm
Tinggi Las Muka	: 1 - 2 mm	Tinggi Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: Backweld

SKETCH



SEQUENCE



No. Lapisan Pada Lasan	1	2	3	4	5	6	7
Jenis	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R	E7018-H4R
Ukuran Kawat Las (mm)	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Ampere, A	80	108	120	118	120	112	114
Volt, V	22	22	25	25	25	23	23
Mulai Mengelas	13.56	14.17	14.45	14.54	15.11	15.58	16.09
Selesai Mengelas	14.14	14.39	14.52	15.06	15.35	16.08	16.17
Durasi Waktu / Lapisan (min)	11,12	11,85	6,88	8,25	14,05	8,45	8,02
Kec.Pengelasan, mm/min	31,47	43,83	54,31	46,71	47,82	83,23	76,71
Heat Input, KJ/mm	3,36	3,25	3,31	3,79	3,76	1,86	2,05
Suhu Antar Sambungan °C	31	120	165	193	243	121	153
Selang Waktu Antara Lasan, min	3	6	2	5	23	1	5

No. Lapisan Pada Lasan	8	9					
Jenis	E7018-H4R	E7018-H4R					
Ukuran Kawat Las (mm)	3,2	3,2					
Ampere, A	115	115					
Volt, V	23	23					
Mulai Mengelas	16.22	16.54					
Selesai Mengelas	16.33	17.00					
Durasi Waktu / Lapisan (min)	7,33	4,38					
Kec.Pengelasan, mm/min	81,32	79,91					
Heat Input, KJ/mm	1,95	1,99					
Suhu Antar Sambungan °C	203	112					
Selang Waktu Antara Lasan, min	21						

RADIOGRAPHY TEST REPORT

PT. KOSTEC INDONESIA MANDIRI

Office : Lingkar Selatan Street (Opposite Horison Hotel)
RT 005 / RW.002 Desa Harjatani Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : Fax : (0254) 781 - 4752

Report No. : KIM-HEI-RT-03
Inspection Date : 21 Januari 2026
Report Date : 22 Januari 2026
Page No. : 1 Of 1

Customer	: PT. HANAZONO ENGINEERINBG INDONESIA	Item Name	: PLATE
Project	: PWPS	DWG. No.	: - Rev. No. 0
Applied Spec.	: AWS D1.1	Procedure No.	: KIM-NDE-AWS-RTP-02 Rev. No. 0
Base Material Type	: A-36 Plate ☑ to A-36 PIPE ☐	Diameter (OD)	: - TO - ☑ mm ☐ inch
		Weld Reinforcement Thickness	: 2
Base Material Thickness	: 25 to 25 ☑ mm ☐ inch	Weld Thickness	: 25 ☑ mm ☐ inch
Item Type	☑ Welding ☐ Casting	Welding Process	: ☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

γ-Ray		X-Ray	
Type	Sentinel ☑ Ir-192 ☐ Co-60	Manufacturer	:
Serial No.	HCD743	Serial No.	:
Curie	34 Ci	kV	mA
Source Size	3 x 3 mm	Focal Size	x ☐ mm

Film Brand	☐ CARESTREAM ☑ AGFA	TYPE ☐ D4 ☑ D7	FILM SIZE ☐ 4X61Inch ☑ 4X15 Inch
Screen	☑ Lead ☐ Fluorescent	Front 0.125 ☑ mm Back 0.125 ☐ inch	
IQI Type	☑ ASTM ☐ KS(JIS) ☐ MIL	ID No. ☐ 1A ☑ 1B ☐ 1C ☐ 1D	IQI Placement ☐ Source Side ☑ Film Side
Source to Object Distance	406 ☑ mm ☐ inch	Exporsure Time	1,2 Minutes
Distance from Source side of object to film	381 ☑ mm ☐ inch		
Set up	Exposure ☑ Single-wall exposure ☐ Double-wall exposure		
	Viewing ☑ Single-wall viewing ☐ Double-wall viewing		Ug = 0.5
Development	Temperature 20°C	Developing Time 3 Minutes	Film Density = 2 ~ 4

Sketch

☑ A ☐ B ☐ C ☐ D ☐ E ☐ F

Icentification No.	GRADE	RESULT ACCEPT	RESULT REJECT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT	Welder Stamp	Remarks
ROMLI A 01-WPS-HEI-AWS-MIGAS-26	A-B	PASS	-	✓												RM-0815	P=2mm

	Interpreted By	Evaluated By	Reviewed By	Client Representative
Name		Rusmanto	A. Rizki. m	
Designation	PCN RFI Level 2	PT Hanazono	JSC	
Signature	Slamet Adi S			
Date	22/01/2026	22 / Jan / 2026	22 Jan 2026	

NOTE :
① P : Porosity
② S : Slag Inclusion
③ IP : Incomplete Penetrat
④ LF : Lack of Fusion
⑤ TI : Tungsten Inclusion
⑥ UC : Undercut
⑦ SD : Surface Defect
⑧ RC : Root Concavity
⑨ BT : Burn-Through
⑩ C : Crack
⑪ SI : Surface Indicater
⑫ OT : Others

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Desa Kertasana, Kecamatan Bojonegara, Kabupaten Serang
Banten, Indonesia (42414)
Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

WELDING PROCEDURE SPECIFICATION (WPS)

Applicable Code: AWS D1.1/1.1M: 2025, Structural Welding Code - Steel

☐ PREQUALIFIED (Pra-Kualifikasi) ☑ QUALIFIED BY TESTING (Kualifikasi dengan Pengujian)

WPS NO. (No. PWPS) : 03-WPS-HEI-AWS-MIGAS-26 DATE (Tanggal) : February 01,2026 SUPPORTING PQR NO. (No. PQR Pendukung) : 03-PQR-HEI-AWS-MIGAS-26

REVISION NO. (Revisi No.) : 0 DATE (Tanggal) : -

WELDING PROCESS (ES) (Proses Pengelasan) : SMAW TYPE (S) (Tipe) : Manual

JOINTS DESIGN USED (Desain Sambungan yang Digunakan)

TYPE (Tipe) : Fillet Welds

☑ SINGLE ☐ DOUBLE WELD

BACKING (Backing) : ☑ YES ☐ NO

BACKING MATERIAL (Material Backing) : Base Metal

ROOT OPENING (Ukuran Celah Root) : N/A

ROOT FACE DIMENSION (Ukuran Pinggiran Root) : N/A

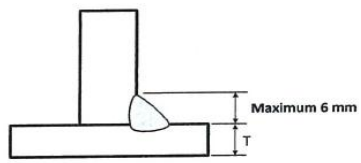
GROOVE ANGLE (Sudut Groove) : N/A

RADIUS (J-U) (Jari-Jari (J-U)) : N/A

BACK GOUGING (Back Gouging) : ☐ YES ☑ NO

METHOD (Metode) : N/A

JOINT DETAIL (Detail Sambungan)



BASE METAL (Logam Dasar)

MATERIAL SPEC. (Spesifikasi Material) : Group I to Group I/II

TYPE OR GRADE (Tipe atau Kelas) :

THICKNESS (Rentang Ketebalan Logam Dasar)

GROOVE : N/A FILLET : 3 mm ~ Unlimited

DIAMETER (PIPE) (Diameter Pipa) : 20 mm - 100 mm

FILLER METAL (Logam Pengisi)

	SMAW
AWS SPECIFICATION (Spesifikasi AWS)	A5.1
AWS CLASSIFICATION (Klasifikasi AWS)	E7018-H4R Ø 2,5/2.6 3.2 4.0
BRAND NAME (Nama Merk)	-

ELECTRICAL CHARACTERISTIC (Karakteristik Elektrik)

TRANSFER MODE (GMAW) (Mode Transfer (GMAW))

☐ SHORT CIRCUITING ☐ GLOBULAR/FCAW

☐ SPRAY

CURRENT : ☐ AC ☑ DCEP ☐ DCEN ☐ PULSED

OTHER : N/A

TUNGSTEN ELECTRODE (GTAW)

SIZE (Ukuran) : N/A

TYPE (Tipe) : N/A

SHIELDING (Pelindung)

	SMAW
FLUX (Flux)	N/A
GAS (Gas)	N/A
COMPOSITION (Komposisi)	N/A
ELECTRO - FLUX (CLASS) (Kelas Elektro Fluks)	NA
FLOW RATE (Laju Alir)	N/A
GAS CUP SIZE (Ukuran Nozzle Gas)	NA

TECHNIQUE (Teknik)

STRINGER OR WEAVE BEAD (Lurus atau Mengayun) : Stringer or weaving

MULTI PASS OR SINGLE PASS (PER SIDE) (Satu Pass atau Banyak Pass (Per Sisi)) : Single

NUMBER OF ELECTRODE (Jumlah Elektroda) : Single Electrode

ELECTRODE SPACING (Jarak antar Elektroda)

LONGITUDINAL N/A

LATERAL N/A

ANGLE N/A

CONTACT TUBE TO WORK DISTANCE (Jarak kontak Tube ke Benda Kerja) : NA

PEENING (Peening) : N/A

INTERPASS CLEANING (Pembersihan Antar Pass) : Grinding, Brushing, and Chipping

PREHEAT (Pemanasan Awal)

PREHEAT TEMP. MIN. (Temperatur Minimum Pemanasan Awal) : See table Below

Thickness/T (mm)	≤ 20 mm	20mm < T ≤38mm	38 mm < T ≤ 65 mm	> 65 mm
Min. Temp (°C)	0	10	65	110

INTERPASS TEMP. MAX. (Temperatur Minimum Antar Pass) : N/A

POSITION (Posisi)

POSITION OF GROOVE (Posisi Groove) : N/A

POSITION OF FILLET (Posisi Fillet) : ALL

VERTICAL PROGRESSION (Pergerakan Vertikal)

☑ UP ☐ DOWN

POST WELD HEAT TREATMENT (Pemanasan Pasca Las)

TEMPERATURE (Temperatur) : N/A

TIME (Waktu) : N/A

Nomor Registrasi Migas
AYG - B - 569/0178/2026

PT. HANAZONO Engineering Indonesia
We are always partner with you

Head Office : Jl. Raya Bojonegara-Serdang No. 44 RT. 001/RW.001
Desa Kertasana, Kecamatan Bojonegara, Kabupaten Serang
Banten, Indonesia (42414)
Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

WELDING PROCEDURE SPECIFICATION (WPS)

Applicable Code: AWS D1.1/1.1M: 2025, Structural Welding Code - Steel

WPS No. : 03-WPS-HEI-AWS-MIGAS-26 Rev : 0 Page 2 of 2

WELDING PARAMETER

PASS OR WELD LAYER(S)	PROCESS	FILLER METAL		CURRENT		VOLT (V)	TRAVEL SPEED (mm/MIN.)	Heat Input (J/mm)	REMARK
		AWS CLASS	DIA. (mm)	TYPE & POLARITY	AMP (A)				
1st	SMAW	E7018H4R	2.5/2.6, 3.2, 4.0	DCEP	70 - 115	20- 24	50 - 110	0,76 - 3,31	

No.	DATE	PREPARED BY	REVIEWED BY	REGISTERED BY MIGAS
0	February 01, 2026	ANDI ISKANDAR	RUSNANDI	Nomor Registrasi Migas: AYG - B. 569/0178/2026

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Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

Page 1 of 2

PQR NO. (No.PQR) : 03-PQR-HEI-AWS-MIGAS-26 DATE (Tanggal) : February 01, 2026 WPS NO. (No. WPS) : 03-WPS-HEI-AWS-MIGAS-26
REV NO. (No. Rev.) : 0 DATE (Tanggal) : -
WELDING PROCESS (ES) (Proses Pengelasan) : SMAW TYPE (S) (Tipe) : Manual

JOINTS DESIGN USED (Desain Sambungan yang Digunakan)
TYPE (Tipe) : Fillet
☑ SINGLE ☐ DOUBLE WELD
BACKING (Backing) : ☑ YES ☐ NO
BACKING MATERIAL (Material Backing) : Material
ROOT OPENING (Ukuran Celah Root) : None
ROOT FACE DIMENSION (Ukuran Pinggiran Root) : None
GROOVE ANGLE (Sudut Groove) : None
RADIUS (J-U) (Jari-Jari (J-U)) : NA
BACK GOUGING (Back Gouging) : ☐ YES ☑ NO
METHOD (Metode) : None

BASE METAL (Logam Dasar)
MATERIAL SPEC. (Spesifikasi Material) : SA 106 to A36
TYPE OR GRADE (Tipe atau Kelas) : Gr B
THICKNESS (Rentang Ketebalan Logam Dasar)
GROOVE : N/A FILLET : 5,54 mm
DIAMETER (PIPE) (Diameter Pipa) : 2" Sch 80

FILLER METAL (Logam Pengisi) SMAW
AWS SPECIFICATION (Spesifikasi AWS) : A5.1
AWS CLASSIFICATION (Klasifikasi AWS) : E7018-H4R
BRAND NAME (Nama merk) : Bohler

SHIELDING (Pelindung) SMAW
FLUX (Flux) : NA GAS (Gas) : NA
COMPOSITION (Komposisi) : NA
ELECTRO - FLUX (CLASS) (Kelas Elektro Fluks) : NA
FLOW RATE (Laju Alir) : NA
GAS CUP SIZE (Ukuran Nozzle Gas) : NA

PREHEAT (Pemanasan Awal)
PREHEAT TEMP. MIN. (Temperatur Minimum Pemanasan Awal) : 30 °C
INTERPASS TEMP. MAX. (Temperatur Maksimum Antar Pass) : None

POSITION (Posisi)
POSITION OF GROOVE (Posisi Groove) : NA
POSITION OF FILLET (Posisi Fillet) : 5F
VERTICAL PROGRESSION (Pergerakan Vertikal)
☑ UP ☐ DOWN

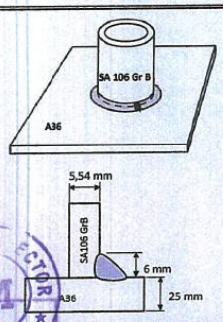
ELECTRICAL CHARACTERISTIC (Karakteristik Elektrik)
TRANSFER MODE (GMAW) (Mode Transfer (GMAW))
☐ SHORT CIRCUITING ☐ GLOBULAR/FCAW
☐ SPRAY
CURRENT : ☐ AC ☑ DCEP ☐ DCEN ☐ PULSED
POWER SOURCE : ☑ CC ☐ CV
OTHER : N/A
TUNGSTEN ELECTRODE (GTAW)
SIZE (Ukuran) : N/A
TYPE (Tipe) : N/A

TECHNIQUE (Teknik)
STRINGER OR WEAVE BEAD (Lurus atau Mengayun) : Weave
MULTI PASS OR SINGLE PASS (PER SIDE) (Satu Pass atau Banyak Pass (Per Sisi)) : Single Pass
NUMBER OF ELECTRODE (Jumlah Elektroda) : Single Electrode
ELECTRODE SPACING (Jarak antar Elektroda)
LONGITUDINAL : N/A
LATERAL : N/A
ANGLE : N/A
CONTACT TUBE TO WORK DISTANCE (Jarak kontak Tube ke Benda Kerja) : N/A
PEENING (Peening) : N/A
INTERPASS CLEANING (Pembersihan Antar Pass) : Grinding, brushing, and chipping

POST WELD HEAT TREATMENT (Pemanasan Pasca Las)
TEMPERATURE (Temperatur) : N/A
TIME (Waktu) : N/A

WELDING PROCEDURE

PASS OR WELD LAYER(S)	PROCESS	FILLER METAL CLASS	FILLER METAL DIA.	CURRENT TYPE & POLARITY	CURRENT AMPS (A)	VOLTS (V)	TRAVEL SPEED (mm/Min)	HEAT INPUT (J/mm)	JOINT DETAILS
1	SMAW	E7018-H4R	3,2	DCEP	108	24	57,21	2.718	



Name: Registrasi Migas
AEG-B-509/0178/2026

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Telp : +62-254-7850344/45/46/47
e-mail : project@hanazono.co.id

PQR no : 03-PQR-HEI-AWS-MIGAS-26

PROCEDURE QUALIFICATION RECORD (PQR)

Applicable Code: AWS D1.1M/D1.1: 2025, Structural Welding Code - Steel

TEST RESULT

TENSILE TEST

SPECIMEN NO.	WIDTH (mm)	THICKNESS (mm)	AREA (mm^2)	ULTIMATE TENSILE LOAD, kN	ULTIMATE UNIT STRESS, N/mm^2	CHARACTER OF FAILURE AND LOCATION
NA						
NA						

GUIDED BEND TEST

SPECIMEN NO.	TYPE OF BEND	RESULT	REMARK
NA			
NA			
NA			
NA			

TOUGHNESS TEST

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMPERATURE (°C)	IMPACT VALUE (Joule)				REMARK
				1	2	3	Average	
N/A								
N/A								

HARDNESS TEST

N/A	Type:	Maximum acceptable value:
	LINE	Obtained Values
	1	NA
	2	NA
	3	NA

MACROETCH TEST : 4ea

APPEARANCE : Good
UNDERCUT : No
PIPING POROSITY : N/A
CONVEXITY : N/A
TEST DATE : January 20, 2026
WITNESSED BY :
:
:

PT REPORT NO. : 01/PT-KIM/HEI/I-2026 RESULT : Passed
UT REPORT NO. : N/A RESULT : N/A

FILLET WELD TEST RESULTS

MINIMUM SIZE MULTIPASS MACROETCH
1. N/A 3. N/A
2. N/A

MAXIMUM SIZE SINGLE PASS MACROETCH
1. leg size 6 mm 3. Leg Size 6 mm
2. leg size 5 mm 4. Leg Size 5 mm

OTHER TEST

ALL-WELD-METAL TENSION TEST
TENSILE STRENGTH, PSI : N/A
YIELD POINT/STRENGTH, PSI : N/A
ELONGATION IN 2 IN., % : N/A
LABORATORY TEST NO. : HT/JKT/0126/0264
CLOCK NO. : NA STAMP NO. : YD-1138

WELDER'S NAME : YODI A
TESTS CONDUCTED BY : PT. Hi-Test Laboratory LABORATORY : PT. Hi-Test - Tangerang
TEST NUMBER : 03-PQR-HEI-AWS-MIGAS-26
PER : Hadi Anwar

WE, THE UNDERSIGNED, CERTIFY THAT THE STATEMENTS IN THIS RECORD ARE CORRECT AND THAT THE TEST WELDS WERE PREPARED, WELDED, AND TESTED IN CONFORMANCE WITH THE REQUIREMENTS OF SECTION 6 OF AWS D1.1/D1.1M:2025 STRUCTURAL WELDING CODE - STEEL.

REV NO.	DATE	Prepared by	Reviewed by	Registered by MIGAS
0	February 01, 2026	International Institute of Welding IWE Andi Iskandar ID/001/IWE-048 Issue date 01/12/2016 Personnel Certification System ANDI ISKANDAR	PT. HANAZONO QC DEPARTMENT Engineering Indonesia RUSNANDI	WELDING INSPECTOR IM MIGAS Nomor Registrasi Migas AYG-B-569/0170/2026

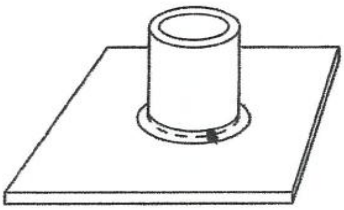
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / ~~JURU LAS / OPERATOR LAS~~

Nama Juru Las	: YODI A	No. Ujian	: -
Perusahaan	: PT. HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI Cilegon	Tanggal Pengujian	: January 20, 2026
		WPS No.	: 03-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1:2025	Supporting PQR No.	: 03-PQR-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 5F	Arah Pengelasan	: UPHILL
Jenis Bahan	: Carbon Steel Pipe to Plat	Pabrik	: N/A
(~~Pipa~~/Pelat)	: SA 106 Gr B		
Diameter	: N/A	Tebal Dinding	: 5,54 mm
		(~~Pipa~~/Pelat)	:
Jenis Bahan Pengisi	: E7018-H4R	Pabrik	: N/A
Panjang yang disambung	: 189,3 mm	Pembersih	: grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: Fillet	Sudut Kampuh	: N/A
Bukaan Las Muka	: N/A	Bukaan Muka Akar	: N/A
Tinggi Las Muka	: N/A	Tinggi Las Akar	: N/A
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: N/A

SKETCH



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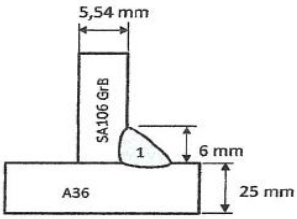

No. Lapisan Pada Lasan	1						
Jenis	E7018-H4R						
Ukuran Kawat Las (mm)	3,2						
Ampere, A	108						
Volt, V	24						
Mulai Mengelas	10:15						
Selesai Mengelas	10:21						
Durasi Waktu / Lapisan (min)	3,68						
Kec.Pengelasan, mm/min	57,21						
Heat Input, KJ/mm	2,72						
Suhu Antar Sambungan °C	31						
Selang Waktu Antara Lasan, min	9						

PENGUJIAN VISUAL :

BENTUK CACAT LAS	LOKASI	UKURAN	KETERANGAN
None	None	None	None

MACAM CACAT : None

HASIL UJIAN VISUAL : Accepted

LIQUID PENETRANT EXAMINATION REPORT

PT. KOSTEC INDONESIA MANDIRI

Office : Lingkar Selatan Street (Opposite Horison Hotel)
RT 005 / RW.002 Desa Harjatani Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : (0254) 781 - 4752
Email : kostecindo@gmail.com

Report No.	01/PT-KIM/HEI/I-2026
Report Date	21 Januari 2026
Page No.	1 of 2

Customer: PT. HANAZONO ENGINEERING INDONESIA	Item Name, No.: Plate to Pipe
Project Name, No.: p WPS	DWG. No.: - Rev. No.:
Applied Spec.: AWS.D1.1. 2025 Edition	Procedure No.: KIM-NDE-AWS-PTP-02 Rev. No.: 0
Material Thckness: Plate 25 ☑ mm; Pipe 5.54 ☐ inch	Traveller & Step No.:
Process: Coloured / Fluorescent — Time of Test: ☐ Before Forming ☐ After Forming	Surface Condition: ☑ As Welded ☐ As Cast ☐ As Forged ☐ As Ground
Test Temp.: - °C	Dry Time & aids after Preparation: - min
Drying time & aids After excess Penetrant Removal: - min	

	Maker	Type	Batch No.	Apply	Dwell time
Penetrant	Magnaflux	SKL-SP2	240104	☑ Brush ☐ Spray ☐ Immerse	5 min
Emulsifier	Magnaflux	SKC-S	2306009	☑ Brush ☐ Spray ☐ Immerse	Emulsified time 1 min
Remover	-	-	-	☐ Brush ☐ Spray ☐ Immerse	☑ Handwipe
Developer	Magnaflux	SKD-S2	2310028	☐ Brush ☐ Spray ☐ Immerse	Development time 10 min

Black Light: ☐ With ☑ Without — Maker: - — Serial No.: - — Intensity: - ☐ ft-cd ☐ μW / cm²

Light Source: ☐ Artificial Light ☑ Natural Light — Artificial Light Type: -

Lux Meter: Maker: - — Model & Type: - — Serial No.: - — Illumination: - lx

Identification No.	Accept	Reject	Interpretation	Length of Ind.	No. of Ind.	Remarks
03-WPS-HEI-AWS-MIGAS-26 YODI	V	-	-	-	-	ACC

Sketch on line, if necessary. ☐ Attached.

	Inspected By	Evaluated By	Reviewed By	Client Representative
Name	Maulana Arif. H	Rusnandi	A. RIZKI M.	
Designation	PT.EN-9712:2012	PT. Hanazono.	JSC	
Date	21 Januari 2026	JAN 22. 2026	22 January 26	
Signature				

LIQUID PENETRANT EXAMINATION REPORT

PT. KOSTEC INDONESIA MANDIRI

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RT 005 / RW.002 Desa Harjatani Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : Fax : (0254) 781 - 4752
Email : kostecindo@gmail.com

Report No.	01/PT-KIM/HEI/I-2026
Report Date	21 Januari 2026
Page No.	2 of 2

PHOTOGRAPH

PENETRANT

DEVELOPER

HI-TEST LAB

PT. Hi-Test
Taman Tekno Blok A2 No. 49
Bumi Serpong Damai (BSD) – Tangerang – Indonesia
Telp : +62 21 75882884
E-mail : hi-test@hitestlab.com

ilac-MRA KAN KOMITE AKREDITASI NASIONAL Laboratorium Penguji LP - 422 - IDN

Testing Report

(This Report is issued subject to the terms & conditions set out below)

Customer : **PT. Hanazono Engineering Indonesia**
Address : Jl. Raya Bojonegara No. 44, Kertasana Kec. Bojonegara, Kab. Serang, Banten 42454
Reference Code : AWS D1.1 : 2025
Test Method : ASTM E340-23
Object to be tested : (as received)

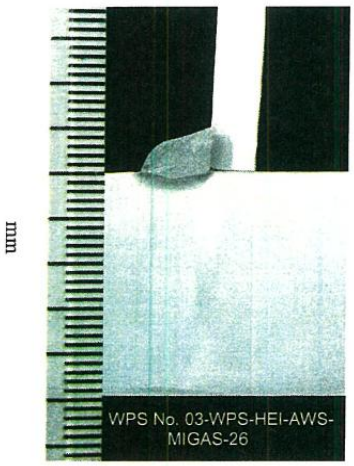
Job No : B26072
No. : HT/JKT/0126/0264
Total of Page : 1 of 4
Date of Received : 27 January 2026
Date of Tested : 28 January 2026
PO No : --
Project Name : --
Sample Marking : 1. HEI 5

One welded carbon steel pipe to plate joint test sample, size: Ø 2" SCH 80 (5.54 mm thickness) to 25 mm thickness, material spec: SA 106 Gr. B to A 36, WPS No. 03-WPS-HEI-AWS-MIGAS-26, PQR No. 03-PQR-HEI-AWS-MIGAS-26, welding process: SMAW, welding position: 5F, welder name: Khabibi, for Welding Procedure Specification Test.

Type of Test : **Macro Examination and Photo**
Magnification : **10x (Examination)**

Specimen No	Thickness (mm)	Width (mm)	Result
1	5.54 to 25	10	Accepted

Macro - Photography



Remark : --
Test Conducted By : Canra Latipolia, ST
Witnessed By : Mr. Andi of PT. ISTEK
Mr. Rusnandi of PT. Hanazono Engineering Indonesia
Mr. A. Rizki M. of PT. JGC Indonesia

Approved Signatory

Suhadi, ST
Laboratory Manager

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PT. Hi-Test
Taman Tekno Blok A2 No. 49
Bumi Serpong Damai (BSD) – Tangerang – Indonesia
Telp : +62 21 75882884
E-mail : hi-test@hitestlab.com

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Testing Report

(This Report is issued subject to the terms & conditions set out below)

Customer : **PT. Hanazono Engineering Indonesia**
Address : Jl. Raya Bojonegara No. 44, Kertasana Kec. Bojonegara, Kab. Serang, Banten 42454
Reference Code : AWS D1.1 : 2025
Test Method : ASTM E340-23
Object to be tested : (as received)

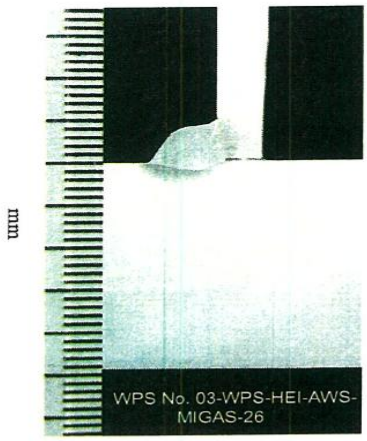
Job No : B26072
No. : HT/JKT/0126/0264
Total of Page : 2 of 4
Date of Received : 27 January 2026
Date of Tested : 28 January 2026
PO No : --
Project Name : --
Sample Marking : 1. HEI 5

One welded carbon steel pipe to plate joint test sample, size: Ø 2" SCH 80 (5.54 mm thickness) to 25 mm thickness, material spec: SA 106 Gr. B to A 36, WPS No. 03-WPS-HEI-AWS-MIGAS-26, PQR No. 03-PQR-HEI-AWS-MIGAS-26, welding process: SMAW, welding position: 5F, welder name: Khabibi, for Welding Procedure Specification Test.

Type of Test : **Macro Examination and Photo**
Magnification : **10x (Examination)**

Specimen No	Thickness (mm)	Width (mm)	Result
2	5.54 to 25	10	Accepted

Macro - Photography



Remark : --
Test Conducted By : Canra Latipolia, ST
Witnessed By : Mr. Andi of PT. ISTEK
Mr. Rusnandi of PT. Hanazono Engineering Indonesia
Mr. A. Rizki M. of PT. JGC Indonesia

Approved Signatory

Suhadi, ST
Laboratory Manager

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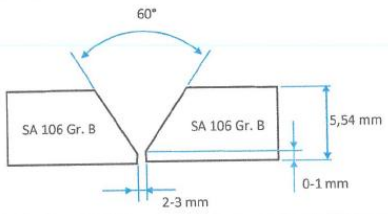
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

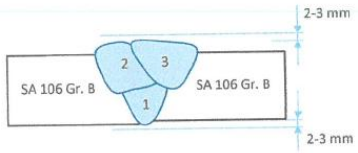
LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / ~~JURU LAS~~ / ~~OPERATOR LAS~~

Nama Juru Las	: SAHRUL	No. Ujian	: -
Perusahaan	: PT HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI	Tanggal Pengujian	: July 30, 2026
		WPS No.	: 02-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1: 2025	Supporting PQR No.	: 02-WPS-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 2G	Arah Pengelasan	:
Jenis Bahan	: Carbon Steel Pipe	Pabrik	: N/A
(~~Pipa~~/Pelat)	: SA 106 Gr. B		
Diameter	: NPS 2 INCH	Tebal Dinding	: 5,54 mm
		(~~Pipa~~/Pelat)	:
Jenis Bahan Pengisi	: E7016 & E7018	Pabrik	: N/A
Panjang yang disambung	: 60,3 MM	Pembersih	: Grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: Single V GROOVE	Sudut Kampuh	: 60°
Bukaan Las Muka	: 0 - 1 mm	Tinggi Muka Akar	: 2-3 mm
Tinggi Las Muka	: 2-3 mm	Bukaan Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: N/A

SKETCH



SEQUENCE



No. Lapisan Pada Lasan	1	2	3				
Jenis	E7016	E7018	E7018				
Ukuran Kawat Las (mm)	3.2	3.2	3.2				
Ampere, A	90	108	110				
Volt, V	21	22	22				
Mulai Mengelas	09:00	09:20	09:32				
Selesai Mengelas	09:12	09:27	09:40				
Durasi Waktu / Lapisan (min)	7,24	5,74	5,65				
Kec.Pengelasan, mm/min	8,33	10,51	10,67				
Heat Input, KJ/mm	13,62	13,57	13,60				
Suhu Antar Sambungan °C	36	94	121				
Selang Waktu Antara Lasan, min	8	5					

DISIAPKAN OLEH QC

PT. Hanazono Engineering Indonesia

(Puji Kurniawan)

DISAKSIKAN DAN DIREVIEW OLEH

PT. ISTEK

(Ferdi Iskandar)

(Andi Iskandar)

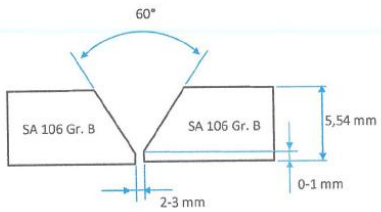
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / ~~JURU LAS / OPERATOR LAS~~

Nama Juru Las	: YODI	No. Ujian	: -
Perusahaan	: PT HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI	Tanggal Pengujian	: July 30, 2026
		WPS No.	: 02-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1: 2025	Supporting PQR No.	: 02-WPS-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 2G	Arah Pengelasan	:
Jenis Bahan	: Carbon Steel Pipe	Pabrik	: N/A
(Pipa/Pelat)	: SA 106 Gr. B		
Diameter	: NPS 2 INCH	Tebal Dinding	: 5,54 mm
		(Pipa/Pelat)	:
Jenis Bahan Pengisi	: E7016 & E7018	Pabrik	: N/A
Panjang yang disambung	: 60,3 MM	Pembersih	: Grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: SIngle V GROOVE	Sudut Kampuh	: 60°
Bukaan Las Muka	: 0 - 1 mm	Tinggi Muka Akar	: 2-3 mm
Tinggi Las Muka	: 2-3 mm	Bukaan Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: N/A

SKETCH



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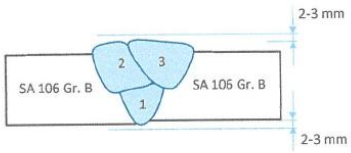

No. Lapisan Pada Lasan	1	2	3				
Jenis	E7016	E7018	E7018				
Ukuran Kawat Las (mm)	3.2	3.2	3.2				
Ampere, A	90	108	110				
Volt, V	21	22	22				
Mulai Mengelas	09:00	09:17	09:27				
Selesai Mengelas	09:10	09:24	09:33				
Durasi Waktu / Lapisan (min)	6,54	5,14	5,20				
Kec.Pengelasan, mm/min	9,22	11,73	11,60				
Heat Input, KJ/mm	12,30	12,15	12,52				
Suhu Antar Sambungan °C	36	90	118				
Selang Waktu Antara Lasan, min	8	5					

DISIAPKAN OLEH QC

PT. Hanazono Engineering Indonesia

(Puji Kurniawan)

DISAKSIKAN DAN DIREVIEW OLEH

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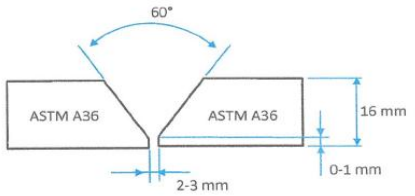
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

LAPORAN PENGUJIAN KUALIFIKASI PROCEDURE/ JURU LAS/OPERATOR LAS

Nama Juru Las	: ARIFIN	No. Ujian	: -
Perusahaan	: PT HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI	Tanggal Pengujian	: July 09, 2026
		WPS No.	: 01-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1: 2025	Supporting PQR No.	: 01B-WPS-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 3G	Arah Pengelasan	: Uphill
Jenis Bahan	: Carbon Steel Plate	Pabrik	: N/A
(Pipa/Pelat)	: ASTM A36		
Diameter	: N/A	Tebal Dinding	: 16 mm
		(Pipa/Pelat)	:
Jenis Bahan Pengisi	: E7018	Pabrik	: N/A
Panjang yang disambung	: 300 mm	Pembersih	: Grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: SIngle V GROOVE	Sudut Kampuh	: 60°
Bukaan Las Muka	: 0 - 1 mm	Tinggi Muka Akar	: 2-3 mm
Tinggi Las Muka	: 2-3 mm	Bukaan Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: Backweld

SKETCH



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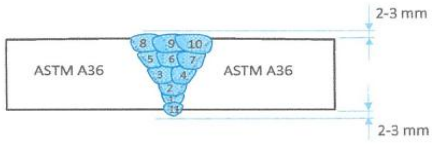

No. Lapisan Pada Lasan	1	2	3	4	5	6	7
Jenis	E7018	E7018	E7018	E7018	E7018	E7018	E7018
Ukuran Kawat Las (mm)	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Ampere, A	105	122	122	122	122	122	122
Volt, V	21	24	24	24	24	24	24
Mulai Mengelas	09:00	09:22	09:36	09:50	10:02	10:14	10:25
Selesai Mengelas	09:15	09:34	09:47	10:00	10:13	10:23	10:35
Durasi Waktu / Lapisan (min)	12,75	11,42	10,72	10,56	10,42	10,41	10,55
Kec.Pengelasan, mm/min	23,53	26,27	27,99	28,41	28,79	28,82	28,44
Heat Input, KJ/mm	5,62	6,69	6,28	6,18	6,10	6,10	6,18
Suhu Antar Sambungan °C	36	84	105	118	126	134	147
Selang Waktu Antara Lasan, min	7	2	3	2	1	2	

No. Lapisan Pada Lasan	8	9	10	11			
Jenis	E7018	E7018	E7018	E7018			
Ukuran Kawat Las (mm)	3.2	3.2	3.2	3.2			
Ampere, A	120	120	120	121			
Volt, V	23	23	23	23			
Mulai Mengelas	10:37	10:49	11:02	11:42			
Selesai Mengelas	10:47	11:00	11:12	11:54			
Durasi Waktu / Lapisan (min)	10,43	10,24	10,82	11,72			
Kec.Pengelasan, mm/min	28,76	29,30	27,73	25,60			
Heat Input, KJ/mm	5,76	5,65	5,97	6,52			
Suhu Antar Sambungan °C	154	162	171	72			
Selang Waktu Antara Lasan, min	2	2	25				

DISIAPKAN OLEH QC

PT. Hanazono Engineering Indonesia

(Puji Kurniawan)

DISAKSIKAN DAN DIREVIEW OLEH

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(Andi Iskandar)

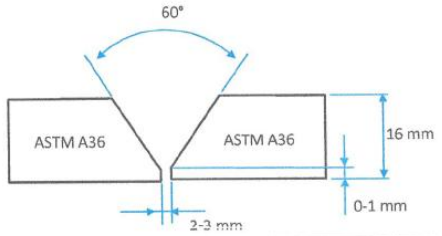
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / JURU LAS / OPERATOR LAS

Nama Juru Las	: AFID RUDIANTO	No. Ujian	: -
Perusahaan	: PT HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI	Tanggal Pengujian	: July 09, 2026
		WPS No.	: 01-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1: 2025	Supporting PQR No.	: 01B-WPS-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 3G	Arah Pengelasan	: Uphill
Jenis Bahan	: Carbon Steel Plate	Pabrik	: N/A
(Pipa/Pelat)	: ASTM A36		
Diameter	: N/A	Tebal Dinding	: 16 mm
		(Pipa/Pelat)	:
Jenis Bahan Pengisi	: E7018	Pabrik	: N/A
Panjang yang disambung	: 300 mm	Pembersih	: Grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: Single V GROOVE	Sudut Kampuh	: 60°
Bukaan Las Muka	: 0 - 1 mm	Tinggi Muka Akar	: 2-3 mm
Tinggi Las Muka	: 2-3 mm	Bukaan Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: Backweld

SKETCH



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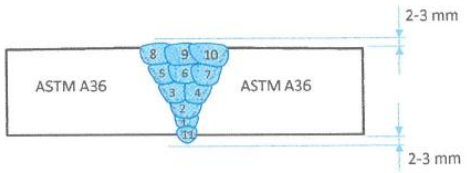


No. Lapisan Pada Lasan	1	2	3	4	5	6	7
Jenis	E7018	E7018	E7018	E7018	E7018	E7018	E7018
Ukuran Kawat Las (mm)	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Ampere, A	104	120	120	120	120	120	120
Volt, V	22	24	24	24	24	24	24
Mulai Mengelas	09:00	09:18	09:32	09:45	09:57	10:10	10:22
Selesai Mengelas	09:14	09:29	09:42	09:55	10:07	10:21	10:32
Durasi Waktu / Lapisan (min)	12,54	10,72	10,50	10,27	10,54	10,42	10,38
Kec.Pengelasan, mm/min	23,92	27,99	28,57	29,21	28,46	28,79	28,90
Heat Input, KJ/mm	5,74	6,17	6,05	5,92	6,07	6,00	5,98
Suhu Antar Sambungan °C	36	84	105	118	126	134	147
Selang Waktu Antara Lasan, min	4	3	3	2	3	1	

1

No. Lapisan Pada Lasan	8	9	10	11			
Jenis	E7018	E7018	E7018	E7018			
Ukuran Kawat Las (mm)	3.2	3.2	3.2	3.2			
Ampere, A	118	118	118	120			
Volt, V	22	22	22	22			
Mulai Mengelas	10:40	10:52	11:05	11:40			
Selesai Mengelas	10:50	11:03	11:15	11:52			
Durasi Waktu / Lapisan (min)	10,77	10,41	10,56	11,72			
Kec.Pengelasan, mm/min	27,86	28,82	28,41	25,60			
Heat Input, KJ/mm	5,59	5,40	5,48	6,19			
Suhu Antar Sambungan °C	155	160	172	68			
Selang Waktu Antara Lasan, min	2	2	25				

DISIAPKAN OLEH QC

PT. Hanazono Engineering Indonesia

(Puji Kurniawan)

DISAKSIKAN DAN DIREVIEW OLEH

PT. ISTEK

(Ferdi Iskandar)

(Andi Iskandar)

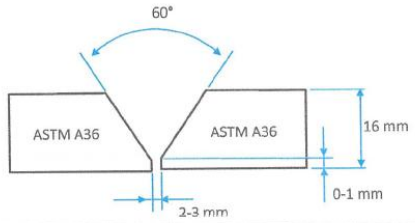
KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA

DIREKTORAT JENDRAL MINYAK DAN GAS BUMI

LAPORAN PENGUJIAN KUALIFIKASI PROSEDUR / JURU LAS / OPERATOR LAS

Nama Juru Las	: ASEP SHOHIBI	No. Ujian	: -
Perusahaan	: PT HEI	Project	: -
Tempat Pengujian	: WORKSHOP PT HEI	Tanggal Pengujian	: July 09, 2026
		WPS No.	: 01-WPS-HEI-AWS-MIGAS-26
Standar yang dipakai	: AWS D1.1: 2025	Supporting PQR No.	: 01B-WPS-HEI-AWS-MIGAS-26
Jenis mesin Las	: Miller	Ampere	: See Table
Proses Pengelasan	: SMAW	Voltage	: See Table
Jenis Arus Listrik	: DCEP		
Gas Pelindung	: N/A	Serbuk Las Pelindung	: N/A
Batas Aliran	: N/A		
Posisi Pengelasan	: 3G	Arah Pengelasan	: Uphill
Jenis Bahan	: Carbon Steel Plate	Pabrik	: N/A
(Pipa/Pelat)	: ASTM A36		
Diameter	: N/A	Tebal Dinding	: 16 mm
		(Pipa/Pelat)	:
Jenis Bahan Pengisi	: E7018	Pabrik	: N/A
Panjang yang disambung	: 300 mm	Pembersih	: Grinding and Brushing
Jenis Klem	: None	Melepaskan Klem	: N/A
Penyerongan	: SIngle V GROOVE	Sudut Kampuh	: 60°
Bukaan Las Muka	: 0 - 1 mm	Tinggi Muka Akar	: 2-3 mm
Tinggi Las Muka	: 2-3 mm	Bukaan Las Akar	: 2-3 mm
Pemanasan Mula	: Ambient temperature	Pemanasan Akhir	: N/A
Interpass Temp. Range	: See Table	Backing Plate/Backweld	: Backweld

SKETCH



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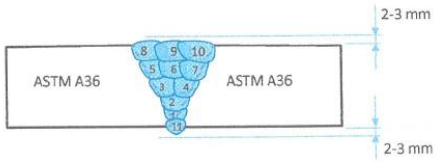


No. Lapisan Pada Lasan	1	2	3	4	5	6	7
Jenis	E7018	E7018	E7018	E7018	E7018	E7018	E7018
Ukuran Kawat Las (mm)	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Ampere, A	98	122	122	122	122	121	122
Volt, V	22	24	24	24	24	24	24
Mulai Mengelas	09:00	09:20	09:32	09:45	09:57	10:10	10:23
Selesai Mengelas	09:15	09:30	09:42	09:55	10:07	10:21	10:33
Durasi Waktu / Lapisan (min)	12,54	10,72	10,50	10,27	10,54	10,42	10,38
Kec.Pengelasan, mm/min	23,92	27,99	28,57	29,21	28,46	28,79	28,90
Heat Input, KJ/mm	5,41	6,28	6,15	6,01	6,17	6,05	6,08
Suhu Antar Sambungan °C	36	78	94	110	132	144	156
Selang Waktu Antara Lasan, min	5	2	3	2	3	2	

4

No. Lapisan Pada Lasan	8	9	10	11				
Jenis	E7018	E7018	E7018	E7018				
Ukuran Kawat Las (mm)	3.2	3.2	3.2	3.2				
Ampere, A	115	115	114	119				
Volt, V	21	21	21	23				
Mulai Mengelas	10:43	11:06	11:18	11:48				
Selesai Mengelas	10:54	11:16	11:28	11:58				
Durasi Waktu / Lapisan (min)	10,77	10,41	10,56	11,72				
Kec.Pengelasan, mm/min	27,86	28,82	28,41	25,60				
Heat Input, KJ/mm	5,20	5,03	5,06	6,42				
Suhu Antar Sambungan °C	163	171	184	65				
Selang Waktu Antara Lasan, min	2	2	20					

DISIAPKAN OLEH QC

PT. Hanazono Engineering Indonesia

(**Puji Kurniawan**)

DISAKSIKAN DAN DIREVIEW OLEH

PT. ISTEK

(Ferdi Iskandar)

(Andi Iskandar)

RADIOGRAPHIC EXAMINATION REPORT

PT. KOSTEC INDONESIA MANDIRI
Office : Kp. Buah Jangkung, Kel. Waringinkurung, Kec. Waringinkurung, Kab. Serang, Banten, 42153
Phone : (0254) 781 - 3765

Report No.	KIM-HEI-RT-03
Examination Date	30 July 2026
Report Date	30 July 2026
Page No.	1 OF 1 — RFI No. -

Project Name, No.	WQT FOR TANGGUH UCC PROJECT - ONSHORE EPCI	Owner : PT. JGC INDONESIA Customer : PT. HANAZONO ENGINEERING INDONESIA	Unit No. -
Applied Spec.	AWS D1.1 2025 Edition	Procedure No. KIM-NDE-AWS-RTP-02	Rev. No. 0
Item Name, No.	PIPE Ø 2" 2G	DWG. No. -	Rev. No. -

Base Material Type	SA 106 B to SA 106 B; Plate ☐ PIPE ☑	Diameter (DN)	2 to 2 ☑ inch
		Weld Reinforcement Thickness	2 ☑ mm
Base Material Thickness	5.5 to 5.5 ☑ mm ☐ inch	Weld Thickness	7.5 ☑ mm ☐ inch
Item Type	☑ Welding ☐ Casting	Welding Process	☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

γ-Ray		X-Ray	
Type	Sentinel ☑ Ir-192 ☐ Co-60	Manufacturer	
Serial No.	HCD743	Serial No.	
Curie	10 Ci	kV	mA
Source Size	3 x 2 mm	Focal Size	x ☐ mm

Film Brand	☑ FUJI ☐ AGFA; TYPE ☐ XD50 ☑ XD100 ☐ D4 ☐ D7; FILM SIZE ☑ 4x10 Inch ☐ 4x15 Inch	Screen	☑ Lead ☐ Fluorescent; Front 0.125 ☑ mm; Back 0.125 ☐ inch
IQI Type	☑ ASTM ☐ KS(JIS) ☐ MIL; ID No. ☐ 1A ☐ 1C ☑ 1B ☐ 1D	IQI Placement	☑ Source Side ☐ Film Side
Source to Object Distance Film	10 ☐ mm ☑ inch	Exporsure Time	3 Minutes
Distance from Source side of object to film	12 ☐ mm ☑ inch		
Set up	Exposure ☐ Single-wall exposure ☑ Double-wall exposure		Sensitivity = 2 %
	Viewing ☐ Single-wall viewing ☑ Double-wall viewing		Ug = 0.51 mm
Development	Temperature 20° C	Developing Time 5 Minutes	Film Density = 2 ~ 4

Sketch: ☐ A ☐ B ☐ C ☐ D ☑ E ☐ F

DESCRIPTION	JOINT NO	WELDER ID	LIMIT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT	RESULT ACC	RESULT REJECT	Remarks
SAHRUL	-	SR-0904	0°	✓												ACC		Porosity
			90°	✓												ACC		Porosity
TOTAL FILMS			2															

	Inspected by	Reviewed By	Reviewed By
Designation	PCN RT Level II		JGC - QC Inspector
Name	Slamet Ade Supriyatno		Ahmad Mufatul
Signature		30-07-26	
Date	30 July 2026		30 July 2026

NOTE : ① P : Porosity ② S : Slag Inclusion ③ IP : Incomplete Penetrat ④ LF : Lack of Fusion ⑤ TI : Tungsten Inclusion ⑥ UC : Undercut ⑦ SD : Surface Defect ⑧ RC : Root Concavity ⑨ BT : Burn-Through ⑩ C : Crack ⑪ SI : Surface Indicater ⑫ OT : Others

PT. KOSTEC INDONESIA MANDIRI

RADIOGRAPHIC EXAMINATION REPORT

PT. KOSTEC INDONESIA MANDIRI

Office : Kp. Buah Jangkung, Kel. Waringinkurung, Kec. Waringinkurung, Kab. Serang, Banten, 42153
Phone : (0254) 781 - 3765

Report No.	KIM-HEI-RT-04
Examination Date	30 July 2026
Report Date	30 July 2026
Page No.	1 OF 1 — RFI No. -

Project Name, No.	WQT FOR TANGGUH UCC PROJECT - ONSHORE EPCI	Owner : PT. JGC INDONESIA Customer : PT. HANAZONO ENGINEERING INDONESIA Unit No. -
Applied Spec.	AWS D1.1 2025 Edition	Procedure No. KIM-NDE-AWS-RTP-02 — Rev. No. 0
Item Name, No.	PIPE Ø 2" 2G	DWG. No. - — Rev. No. -

Base Material Type	SA 106 B to SA 106 B; Plate ☐ PIPE ☑	Diameter (DN)	2 to 2 ☑ inch
		Weld Reinforcement Thickness	2 ☑ mm
Base Material Thickness	5.5 to 5.5 ☑ mm ☐ inch	Weld Thickness	7.5 ☑ mm ☐ inch
Item Type	☑ Welding ☐ Casting	Welding Process	☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

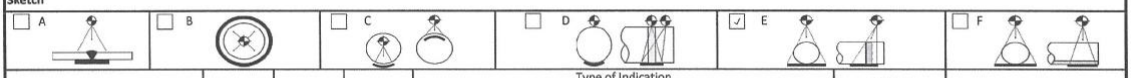
γ-Ray		X-Ray	
Type	Sentinel ☑ Ir-192 ☐ Co-60	Manufacturer	:
Serial No.	HCD743	Serial No.	:
Curie	10 Ci		kV mA
Source Size	3 x 2 mm	Focal Size	x ☐ mm

Film Brand	☑ FUJI ☐ AGFA; TYPE ☐ XD50 ☑ XD100 ☐ D4 ☐ D7; FILM SIZE ☑ 4x10 Inch ☐ 4x15 Inch	Screen	☑ Lead ☐ Fluorescent; Front 0.125 ☑ mm; Back 0.125 ☐ inch
IQI Type	☑ ASTM ☐ KS(JIS) ☐ MIL; ID No. ☐ 1A ☐ 1C ☑ 1B ☐ 1D	IQI Placement	☑ Source Side ☐ Film Side
Source to Object Distance Film	10 ☐ mm ☑ inch	Exposure Time	3 Minutes
Distance from Source side of object to film	12 ☐ mm ☑ inch		

Set up	Exposure	☐ Single-wall exposure	☑ Double-wall exposure	Sensitivity = 2 %
	Viewing	☐ Single-wall viewing	☑ Double-wall viewing	Ug = 0.51 mm
Development	Temperature	20° C	Developing Time 5 Minutes	Film Density = 2 ~ 4

Sketch

☐ A ☐ B ☐ C ☐ D ☑ E ☐ F



DESCRIPTION	JOINT NO	WELDER ID	LIMIT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT	RESULT ACC	RESULT REJECT	Remarks
YODI	-	YD-1138	0°	✓												ACC		Porosity
			90°	✓												ACC		Porosity
TOTAL FILMS			2															

	Inspected By	Reviewed By	Reviewed By
Designation	PCN RFT Level II		JGC - QC Inspector
Name	Slamet Ade Supriyanto		Ahmad Muklahul Ky
Signature		31/07/26	
Date	30 July 2026		31 July 2026

NOTE :
① P : Porosity
② S : Slag Inclusion
③ IP : Incomplete Penetrat
④ LF : Lack of Fusion
⑤ TI : Tungsten Inclusion
⑥ UC : Undercut
⑦ SD : Surface Defect
⑧ RC : Root Concavity
⑨ BT : Burn-Through
⑩ C : Crack
⑪ SI : Surface Indicater
⑫ OT : Others

PT. KOSTEC INDONESIA MANDIRI

RADIOGRAPHY TEST REPORT

PT. KOSTEC INDONESIA MANDIRI

Office : Lingkar Selatan Street (Opposite Horison Hotel)
RT 005 / RW.002 Desa Harjatani Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : Fax : (0254) 781 - 4752

Report No. : KIM-HEI-RT-10
Inspection Date : 10 Juli 2026
Report Date : 11 Juli 2026
Page No. : 1 Of 1

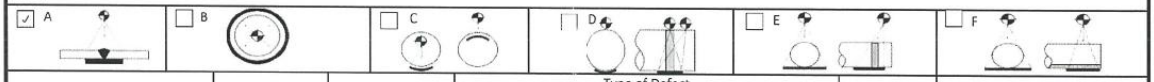
Customer	: PT. HANAZONO ENGINEERINBG INDONESIA	Item Name	: PLATE 3G
Project	: WQT	DWG. No.	: - Rev. No. 0
Applied Spec.	: AWS D1.1 2025 Edition	Procedure No.	: KIM-NDE-AWS-RTP-02 Rev. No. 0
Base Material Type	: SA-36 Plate ☑ to SA-36 PIPE ☐	Diameter (OD) / Weld Reinforcement Thickness	: - TO - ☑ mm ☐ inch / : 2
Base Material Thickness	: 16 to 16 ☑ mm ☐ inch	Weld Thickness	: 18 ☑ mm ☐ inch
Item Type	☑ Welding ☐ Casting	Welding Process	: ☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

γ-Ray		X-Ray	
Type	Sentinel ☑ Ir-192 ☐ Co-60	Manufacturer	:
Serial No.	HCD743	Serial No.	:
Curie	10 Ci		kV mA
Source Size	3 x 3 mm	Focal Size	x ☐ mm

Film Brand	☑ FUJI ☐ AGFA	TYPE ☐ D4 ☑ D7	FILM SIZE ☐ 4X610Inch ☑ 4X15 Inch
Screen	☑ Lead ☐ Fluorescent	Front 0.125 ☑ mm Back 0.125 ☐ inch	
IQI Type	☑ ASTM ☐ KS(JIS) ☐ MIL	ID No. ☐ 1A ☐ 1C ☑ 1B ☐ 1D	IQI Placement ☑ Source Side ☐ Film Side
Source to Object Distance	406 ☑ mm ☐ inch	Exporsure Time	30 Second
Distance from Source side of object to film	381 ☑ mm ☐ inch		
Set up	Exposure ☑ Single-wall exposure ☐ Double-wall exposure		
	Viewing ☑ Single-wall viewing ☐ Double-wall viewing		Ug = 0.5
Development	Temperature 20°C	Developing Time 3 Minutes	Film Density = 2 ~ 4

Sketch

☑ A ☐ B ☐ C ☐ D ☐ E ☐ F



Identification No.	GRADE	RESULT ACCEPT	RESULT REJECT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT	Welder Stamp	Remarks
ARIFIN	A-B	ACCEPT	-													HAD	

	Interpreted By	Evaluated By	Reviewed By	Client Representative
Name	Slamet Ade S		Ahmad Nizhatul Rep. JGC	
Designation	PCN RFI Level 2			
Signature		20/07 26		
Date	11/07/2026		20 July 2026	

NOTE :
① P : Porosity
② S : Slag Inclusion
③ IP : Incomplete Penetrat
④ LF : Lack of Fusion
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⑦ SD : Surface Defect
⑧ RC : Root Concavity
⑨ BT : Burn-Through
⑩ C : Crack
⑪ SI : Surface Indicater
⑫ OT : Others

RADIOGRAPHY TEST REPORT

PT. KOSTEC INDONESIA MANDIRI
Office : Lingkar Selatan Street (Opposite Horison Hotel)
RT 005 / RW.002 Desa Harjatani Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : Fax : (0254) 781 - 4752

Report No. : KIM-HEI-RT-03
Inspection Date : 10 Juli 2026
Report Date : 11 Juli 2026
Page No. : 1 Of 1

Customer	: PT. HANAZONO ENGINEERINBG INDONESIA	Item Name	: PLATE 3G
Project	: WQT	DWG. No.	: - Rev. No. 0
Applied Spec.	: AWS D1.1 2025 Edition	Procedure No.	: KIM-NDE-AWS-RTP-02 Rev. No. 0
Base Material Type	: SA-36 to SA-36; Plate ☑ PIPE ☐	Diameter (OD)	: - TO - ☑ mm
		Weld Reinforcement Thickness	: 2 ☐ inch
Base Material Thickness	: 16 to 16 ☑ mm ☐ inch	Weld Thickness	: 18 ☑ mm ☐ inch
Item Type	☑ Welding ☐ Casting	Welding Process	: ☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

γ-Ray		X-Ray	
Type	Sentinel ☑ Ir-192 ☐ Co-60	Manufacturer	:
Serial No.	HCD743	Serial No.	:
Curie	10 Ci		kV mA
Source Size	3 x 3 mm	Focal Size	x ☐ mm

Film Brand	☑ FUJI ☐ AGFA; TYPE ☐ D4 ☑ D7; FILM SIZE ☐ 4X610Inch ☑ 4X15 Inch	Screen	☑ Lead ☐ Fluorescent; Front 0.125 ☑ mm; Back 0.125 ☐ inch
IQI Type	☑ ASTM ☐ KS(JIS) ☐ MIL; ID No. ☐ 1A ☐ 1C ☑ 1B ☐ 1D	IQI Placement	☐ Source Side ☑ Film Side
Source to Object Distance	406 ☑ mm ☐ inch	Exporsure Time	30 Second
Distance from Source side of object to film	381 ☑ mm ☐ inch		
Set up	Exposure ☑ Single-wall exposure ☐ Double-wall exposure		
	Viewing ☑ Single-wall viewing ☐ Double-wall viewing		Ug = 0.5
Development	Temperature 20°C	Developing Time 3 Minutes	Film Density = 2 ~ 4

Sketch

☑ A ☐ B ☐ C ☐ D ☐ E ☐ F

Identification No.	GRADE	RESULT ACCEPT	RESULT REJECT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT	Welder Stamp	Remarks
AFID RUDIANTO	A-B	ACCEPT	-		✓											HAK	S=2 mm

	Interpreted By	Evaluated By	Reviewed By	Client Representative
Name	Slamet Ade S			
Designation	PCN RFI Level 2			
Signature		13/06	Ahmad Miftahul 13 July 2026	
Date	11/07/2026			

NOTE :
① P : Porosity
② S : Slag Inclusion
③ IP : Incomplete Penetrat
④ LF : Lack of Fusion
⑤ TI : Tungsten Inclusion
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⑦ SD : Surface Defect
⑧ RC : Root Concavity
⑨ BT : Burn-Through
⑩ C : Crack
⑪ SI : Surface Indicater
⑫ OT : Others

RADIOGRAPHY TEST REPORT

PT. KOSTEC INDONESIA MANDIRI
Office : Lingkar Selatan Street (Opposite Horison Hotel)
RT 005 / RW.002 Desa Harjatani Kecamatan Kramatwatu Serang Banten
Phone : (0254) 781 - 3765 Fax : Fax : (0254) 781 - 4752

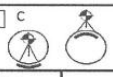
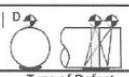
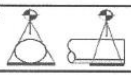
Report No. : KIM-HEI-RT-04
Inspection Date : 10 Juli 2026
Report Date : 11 Juli 2026
Page No. : 1 Of 1

Customer	: PT. HANAZONO ENGINEERINBG INDONESIA	Item Name	: PLATE 3G
Project	: WQT	DWG. No.	: - Rev. No. 0
Applied Spec.	: AWS D1.1 2025 Edition	Procedure No.	: KIM-NDE-AWS-RTP-02 Rev. No. 0
Base Material Type	: SA-36 Plate ☑ to SA-36 PIPE ☐	Diameter (OD)	: - TO - ☑ mm
		Weld Reinforcement Thickness	: 2 ☐ inch
Base Material Thickness	: 16 to 16 ☑ mm ☐ inch	Weld Thickness	: 18 ☑ mm ☐ inch
Item Type	☑ Welding ☐ Casting	Welding Process	: ☑ SMAW ☐ SAW ☐ GMAW ☐ GTAW ☐ FCAW

γ-Ray		X-Ray	
Type	Sentinel ☑ Ir-192 ☐ Co-60	Manufacturer :	
Serial No.	HCD743	Serial No.	:
Curie	10 Ci	kV	mA
Source Size	3 x 3 mm	Focal Size	x ☐ mm

Film Brand	☑ FUJI ☐ AGFA	TYPE ☐ D4 ☑ D7	FILM SIZE ☐ 4X610Inch ☑ 4X15 Inch
Screen	☑ Lead ☐ Fluorescent	Front 0.125 ☑ mm	Back 0.125 ☐ inch
IQI Type	☑ ASTM ☐ KS(JIS) ☐ MIL	ID No. ☐ 1A ☐ 1C ☑ 1B ☐ 1D	IQI Placement ☐ Source Side ☑ Film Side
Source to Object Distance	406 ☑ mm ☐ inch	Exporsure Time	30 Second
Distance from Source side of object to film	381 ☑ mm ☐ inch		
Set up	Exposure ☑ Single-wall exposure ☐ Double-wall exposure		
	Viewing ☑ Single-wall viewing ☐ Double-wall viewing		Ug = 0.5
Development	Temperature 20°C	Developing Time 3 Minutes	Film Density = 2 ~ 4

Sketch

☑ A ☐ B ☐ C  ☐ D  ☐ E ☐ F 

Identification No.	GRADE	RESULT ACCEPT	RESULT REJECT	① P	② S	③ IP	④ LF	⑤ TI	⑥ UC	⑦ SD	⑧ RC	⑨ BT	⑩ C	⑪ SI	⑫ OT	Welder Stamp	Remarks
ASEP SOHIBI	A-B	ACCEPT	-		✓											HAK	S=1.5 mm

	Interpreted By	Evaluated By	Reviewed By	Client Representative
Name	Slamet Ade S			
Designation	PCN RFI Level 2			
Signature				
Date	11/07/2026			

NOTE :
① P : Porosity
② S : Slag Inclusion
③ IP : Incomplete Penetrat
④ LF : Lack of Fusion
⑤ TI : Tungsten Inclusion
⑥ UC : Undercut
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