



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 11/DEC/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

JS CABLE CO., LTD.

Model Name(s): 600V, 2kV Marine Shipboard Oil Rig Cable - See Description

Presented to:

JS CABLE CO., LTD.
569, BOSEONG-RI
PUNGSE-MYEON
CHEONAN-SI
Chungcheongnam-Do
Korea, Republic of

Intended Service:

Class B Conductor (Distribution Cables): Power, lighting and heat tracing circuits,
Class B Conductor (Instrumentation Cables): Control and Instrumentation circuits,
Class B Conductor (Signal Cables): Instrumentation, communication and alarm
circuits, Flexible Conductor (Distribution Cables): Power, lighting and heat tracing
circuits, Flexible Conductor (Instrumentation Cables): Control and Instrumentation
circuits, Flexible Conductor (Signal Cables): Instrumentation, communication and
alarm circuits

Description:

1) Flame Retardant Type Class B Conductor & Flexible Conductor (Distribution Cables) Model: 2KV: SP (HD), SPA (HD), SPB (HD), SP, SPA, SPB, SPBS, TPN, TPNA, TPNB, TPNBS 600V: SP, SPA, SPB, SPBS, SLSEL, SLSELA, SLSELB, SLSELBS, SPM, SPMA, SPMB, SPMBS, DPN, DPNA, DPNB, DPNBS, DLSEL, DLSELA, DLSELB, DLSELBS, DPM, DPMA, DPMB, DPMBS, TPN, TPNA, TPNB, TPNBS, TLSEL, TLSELA, TLSELB, TLSELBS, TPM, TPMA, TPMB, TPMBS, FPN, FPNA, FPNB, FPNBS, FLSEL, FLSELA, FLSELB, FLSELBS, FPM, FPMA, FPMB, FPMBS, QPN, QPNA, QPNB, QPNBS, QLSEL, QLSELA, QLSELB, QLSELBS, QPM, QPMA, QPMB, QPMBS Class B Conductor & Flexible Conductor (Instrumentation Cables) Model: C*PN, C*PNA, C*PNB, C*PNBS, C*LSEL, C*LSELA, C*LSELB, C*LSELBS, C*PM, C*PMA, C*PMB, C*PMBS, C(OS)*PN, C(OS)*PNA, C(OS)*PNB, C(OS)*PNBS, C(OS)*LSEL, C(OS)*LSELA, C(OS)*LSELB, C(OS)*LSELBS, C(OS)*PM, C(OS)*PMA, C(OS)*PMB, C(OS)*PMBS C(OBS)*PN, C(OBS)*PNA, C(OBS)*PNB, C(OBS)*PNBS, C(OBS)*LSEL, C(OBS)*LSELA, C(OBS)*LSELB, C(OBS)*LSELBS, C(OBS)*PM,

C(OBS)*PMA, C(OBS)*PMB, C(OBS)*PMBS Class B Conductor & Flexible Conductor (Signal Cables) Model: TP(OS)*PN, TP(OS)*PNA, TP(OS)*PNB, TP(OS)*PNBS, TP(OS)*LSEL, TP(OS)*LSELA, TP(OS)*LSELB, TP(OS)*LSELBS, TP(OS)*PM, TP(OS)*PMA, TP(OS)*PMB, TP(OS)*PMBS, TP(OBS)*PN, TP(OBS)*PNA, TP(OBS)*PNB, TP(OBS)*PNBS, TP(OBS)*LSEL, TP(OBS)*LSELA, TP(OBS)*LSELB, TP(OBS)*LSELBS, TP(OBS)*PM, TP(OBS)*PMA, TP(OBS)*PMB, TP(OBS)*PMBS TP(I/S)*PN, TP(I/S)*PNA, TP(I/S)*PNB, TP(I/S)*PNBS, TP(I/S)*LSEL, TP(I/S)*LSELA, TP(I/S)*LSELB, TP(I/S)*LSELBS, TP(I/S)*PM, TP(I/S)*PMA, TP(I/S)*PMB, TP(I/S)*PMBS TP(I/S-OS)*PN, TP(I/S-OS)*PNA, TP(I/S-OS)*PNB, TP(I/S-OS)*PNBS, TP(I/S-OS)*LSEL, TP(I/S-OS)*LSELA, TP(I/S-OS)*LSELB, TP(I/S-OS)*LSELBS, TP(I/S-OS)*PM, TP(I/S-OS)*PMA, TP(I/S-OS)*PMB, TP(I/S-OS)*PMBS, TT(OS)*PN, TT(OS)*PNA, TT(OS)*PNB, TT(OS)*PNBS, TT(OS)*LSEL, TT(OS)*LSELA, TT(OS)*LSELB, TT(OS)*LSELBS, TT(OS)*PM, TT(OS)*PMA, TT(OS)*PMB, TT(OS)*PMBS TT(I/S-OS)*PN, TT(I/S-OS)*PNA, TT(I/S-OS)*PNB, TT(I/S-OS)*PNBS, TT(I/S-OS)*LSEL, TT(I/S-OS)*LSELA, TT(I/S-OS)*LSELB, TT(I/S-OS)*LSELBS, TT(I/S-OS)*PM, TT(I/S-OS)*PMA, TT(I/S-OS)*PMB, TT(I/S-OS)*PMBS 2) Fire Resistant Type Same as flame retardant type but prefix FS- is added to each type. - Insulation: Type P, Type LSE (IEEE 1580-2001/45-1998), Type X110 (UL 1309-1995) and Type X (IEEE 45-1983) - Jacket: Type N, Type L (IEEE 1580-2001/45-1998), Type M (Mud Resistant: IEC 60092-359 SHF2, NEK 606-1997) - Optional aluminum or bronze armor and optional individual or overall shield - Max. operating conductor temperature: 100 Deg. C - Flammability: Sec. 5.17.5 of IEEE 1580-2001, Sec. 8.13.4 of IEEE 45-1998, IEC 60332-3 category A - Cold bend (-40 Deg. C) & cold impact (-35 Deg. C) of CSA C22.2 No.03

Ratings:

Class B Conductor (Distribution Cables): 600V or 2KV, Conductor Size: 14 AWG through 1000 MCM, No. of cores: 1 through 5 Class B Conductor (Instrumentation Cables): 600V, Conductor size: 20 through 10 AWG, No. of cores: 2 through 91 Class B Conductor (Signal Cables): 600V, Conductor size: 20 through 14 AWG, No. of pairs: 1 through 24, No. of triad: 1 through 24 Flexible Conductor (Distribution Cables): 600V or 2KV, Conductor Size: 14 AWG through 1111 MCM, No. of cores: 1 through 5 Flexible Conductor (Instrumentation Cables): 600V, Conductor size: 20 through 10 AWG, No. of cores: 2 through 91 Flexible Conductor (Signal Cables): 600V, Conductor size: 22 through 14 AWG, No. of pairs: 1 through 24, No. of triad: 1 through 16

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Approval is based on tests carried out by Intertek Testing Services NA Inc.

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This Design Assessment Certificate number 02-BK331190/2-PDA, dated 19/Jun/2007 will expire on 18/Jun/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules:

2007 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9, 2001 MODU Rule 4-3-4/13.1

National Standards:

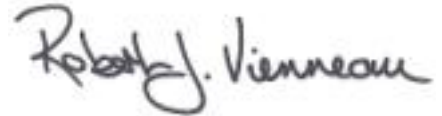
IEEE 45-1998, IEEE 45-1983, IEEE 1580-2001, IEEE 1202-1991, UL-1309, CSA C22- No.03, NEK 606-1997 as applicable.

International Standards:

IEC 60092-359, 60332-3, 60331 as applicable.

Government Authority:**EUMED:****Others:**

Manufacturer's specification JSSIE-02046, JSSIE-02047 & JSSIE-02046(Appendix 1)



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 11/DEC/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

JS CABLE CO., LTD.

Model Name(s): 5 kV, 8 kV, 15 kV Marine Shipboard Cables - See Description

Presented to:

JS CABLE CO., LTD.
569, BOSEONG-RI
PUNGSE-MYEON
CHEONAN-SI
Chungcheongnam-Do
Korea, Republic of

Intended Service:

Class B Conductor (Distribution Cables): Power, lighting and heat tracing circuits
Flexible Conductor (Distribution Cables): Power, lighting and heat tracing circuits

Description:

1) Flame Retardant Type Class B Conductor & Flexible (Distribution Cables)
Model: 5KV, 8KV, 15KV: SEN(BS), SEL(BS), TEN(BS), TEL(BS) 2) Fire Resistant Type Same as flame retardant type but prefix FS- is added to each type. 3) Three Core Cable with Grounding Conductor Same as flame retardant and fire resistant types, but suffix "G" is added - Insulation: Type E (IEEE 1580-2001/45-1998), Type E90 (UL 1309-1995) - Jacket: Type N, Type L (IEEE 1580-2001/45-1998) - Bronze armored & sheathed - Max. operating conductor temperature: 90 Deg. C - Flammability: Sec. 5.17.5 of IEEE 1580-2001, Sec. 8.13.4 of IEEE 45-1998 IEC 60332-3 category A - Cold bend (-40 Deg. C) & cold impact (-35 Deg. C) of CSA C22.2 No.03

Ratings:

5KV: Conductor size: 8AWG through 1111MCM, No. of cores: 1 ,3 Insulation level: 100 %, 133 % 8KV: Conductor size: 6AWG through 1111MCM, No. of cores: 1 ,3 Insulation level: 100 %, 133 % 15KV: Conductor size: 2AWG through 1111MCM, No. of cores: 1 ,3 Insulation level: 100 %, 133 % Three core cables may be produced with grounding conductor, suffix "G" is added to the cable type

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Approval is based on tests carried out by Intertek Testing Services NA Inc.

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use

on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This Design Assessment Certificate number 02-BK333043/1-PDA, dated 19/Jun/2007 will expire on 18/Jun/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules:

2007 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9, 2001 MODU Rule 4-3-4/13.1

National Standards:


IEEE 45-1998, IEEE 1580-2001, IEEE 1202-1991, UL-1309, UL-1072, CSA C22-No.03, ICEA S-68-516, NEMA WC 8 1998

International Standards:

IEC 60092-3, 60332-3, 60331 as applicable.

Government Authority:**EUMED:****Others:**

Manufacturer's specification JSSIE-02044-1 & JSSIE 02045-1



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 11/DEC/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

JS CABLE CO., LTD.

Model Name(s): Class B & Flexible Conductor

Presented to:

JS CABLE CO., LTD.
569, BOSEONG-RI
PUNGSE-MYEON
CHEONAN-SI
Chungcheongnam-Do
Korea, Republic of

Intended Service:

Class B Conductor (Distribution Cables): Power, lighting and heat tracing circuits
Class B Conductor (Instrumentation Cables): Control and instrumentation circuits
Class B Conductor (Signal Cables): Control, instrumentation, communication and alarm circuits
Flexible Conductor (Distribution Cables): Power, lighting and heat tracing circuits
Flexible Conductor (Instrumentation Cables): Control and instrumentation circuits
Flexible Conductor ((Signal Cables): Control, instrumentation, communication and alarm circuits

Description:

Class B Conductor (Distribution Cables) Model: 2KV: SP 2KV(HD), SPA 2KV(HD), SPB 2KV (HD), SPBS 2KV (HD) DPN 2KV(HD), DPNA 2KV(HD), DPNB 2KV (HD), DPNBS 2KV (HD) TPN 2KV(HD), TPNA 2KV(HD), TPNB 2KV (HD), TPNBS 2KV (HD) FPN 2KV(HD), FPNA 2KV(HD), FPNB 2KV (HD), FPNBS 2KV (HD) 600V: SP, SPA, SPB, SPBS, DPN, DPNA, DPNB, DPNBS TPN, TPNA, TPNB, TPNBS, FPN, FPNA, FPNB, FPNBS QPN, QPNA, QPNB, QPNBS Class B Conductor (Instrumentation Cables) Model: C*PN, C*PNA, C*PNB, C*PNBS C(OS)*PN, C(OS)*PNA, C(OS)*PNB, C(OS)*PNBS C(OBS)*PN, C(OBS)*PNA, C(OBS)*PNB, C(OBS)*PNBS Class B Conductor (Signal Cables) Model: TP(OS)*PN, TP(OS)*PNA, TP(OS)*PNB, TP(OS)*PNBS TP(OBS)*PN, TP(OBS)*PNA, TP(OBS)*PNB, TP(OBS)*PNBS TP(I/S)*PN, TP(I/S)*PNA, TP(I/S)*PNB, TP(I/S)*PNBS TP(I/S-OS)*PN, TP(I/S-OS)*PNA, TP(I/S-OS)*PNB, TP(I/S-OS)*PNBS TT(OS)*PN, TT(OS)*PNA, TT(OS)*PNB, TT(OS)*PNBS TT(I/S-OS)*PN, TT(I/S-OS)*PNA, TT(I/S-OS)*PNB, TT(I/S-OS)*PNBS Flexible Conductor (Distribution Cables) Model: 2KV: SP2KV(HD), SPA 2KV(HD) SPB

2KV(HD) SPBS 2KV(HD) 600V: SP, SPA, SPB, SPBS, DPN, DPNA, DPNB, OPNBS TPN, TPNA, TPNB, TPNBS, FPN, FPNA, FPNB, FPNBS QPN, QPNA, QPNB, QPNBS Flexible Conductor (Instrumentation Cables) Model: C*PN, C*PNB, C*PNA, C*PNBS, C(OS)*PN, C(OS)*PNB, C(OS)*PNA, C(OS)*PNBS, C(OBS)*PN, C(OBS)*PNB, C(OBS)*PNA, C(OBS)*PNBS Flexible Conductor (Signal Cables) Model: TP(OS)*PN, TP(OS)*PNB, TP(OS)*PNA, TP(OS)*PNBS, TP(OBS)*PN, TP(OBS)*PNB, TP(OBS)*PNA, TP(OBS)*PNBS, TP(I/S)*PN, TP(I/S)*PNB, TP(I/S)*PNA, TP(I/S)*PNBS, TP(I/S-OS)*PN, TP(I/S-OS)*PNB, TP(I/S-OS)*PNA, TP(I/S-OS)*PNBS, TT(OS)*PN, TT(OS)*PNB, TT(OS)*PNA, TT(OS)*PNBS, TT(I/S-OS)*PN, TT(I/S-OS)*PNB, TT(I/S-OS)*PNA, TT(I/S-OS)*PNBS Marine shipboard cables complying cross-linked polyolefin insulation and neoprene jacket with optional aluminum or bronze braided armor and optional overall neoprene sheath and optional individual or overall screen. Max. operating conductor temperature: 100 degree C Flammability: Section 8.13.4 of IEEE 45-1998, IEC 60332-3 Category A

Ratings:

Class B Conductor (Distribution Cable): 600V or 2KV, Conductor sizes: 14 AWG through 1000 MCM: No. of cores: 1 through 4, 14 AWG through 4/0 AWG: No. of cores: 5 Class B Conductor (Instrumentation Cables): 600V, Conductor Sizes: 20 AWG through 10 AWG, No. of cores: 2 through 91 Class B Conductor (Signal Cable): 600V, Conductor Sizes: 20, 18, 16 AWG, No of pairs: 1 through 24, No. of triads: 1 through 24 Flexible Conductor (Distribution Cables): 600V or 2KV, Conductor sizes: 8 AWG through 1111 MCM, No. of cores: 1 through 5 Flexible Conductor (Instrumentation Cables): 600V, Conductor sizes: 20 AWG through 10 AWG, No. of cores: 2 through 91 Flexible Conductor (Signal Cables): 600V, Conductor sizes: 22 AWG through 12 AWG, No. of pairs: 1 through 24 No. of triads: 1 through 16

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Approval is based on tests carried out by Intertek Testing Services NA Inc.

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This Design Assessment Certificate number 02-BK265598/1-PDA, dated 26/Jul/2007 will expire on 25/Jul/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules:

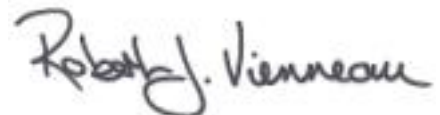
2007 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9, 2001 MODU Rule 4-3-4/13

National Standards:**International Standards:**

IEEE45-1998, IEC Pub60092-3

Government Authority:**EUMED:****Others:**

Manufacturer Specification, JSSIE-01055 dated 10 November 2001



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 11/DEC/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

JS CABLE CO., LTD.

Model Name(s): 600V, 2kV Marine Shipboard Oil Rig Cable - See Description

Presented to:

JS CABLE CO., LTD.
569, BOSEONG-RI
PUNGSE-MYEON
CHEONAN-SI
Chungcheongnam-Do
Korea, Republic of

Intended Service:

Class B Conductor (Distribution Cables): Power, lighting and heat tracing circuits,
Class B Conductor (Instrumentation Cables): Control and Instrumentation circuits,
Class B Conductor (Signal Cables): Instrumentation, communication and alarm
circuits, Flexible Conductor (Distribution Cables): Power, lighting and heat tracing
circuits, Flexible Conductor (Instrumentation Cables): Control and Instrumentation
circuits, Flexible Conductor (Signal Cables): Instrumentation, communication and
alarm circuits

Description:

1) Flame Retardant Type Class B Conductor & Flexible Conductor (Distribution Cables) Model: 2KV: SP (HD), SPA (HD), SPB (HD), SP, SPA, SPB, SPBS, TPN, TPNA, TPNB, TPNBS 600V: SP, SPA, SPB, SPBS, SLSEL, SLSELA, SLSELB, SLSELBS, SPM, SPMA, SPMB, SPMBS, DPN, DPNA, DPNB, DPNBS, DLSEL, DLSELA, DLSELB, DLSELBS, DPM, DPMA, DPMB, DPMBS, TPN, TPNA, TPNB, TPNBS, TLSEL, TLSELA, TLSELB, TLSELBS, TPM, TPMA, TPMB, TPMBS, FPN, FPNA, FPNB, FPNBS, FLSEL, FLSELA, FLSELB, FLSELBS, FPM, FPMA, FPMB, FPMBS, QPN, QPNA, QPNB, QPNBS, QLSEL, QLSELA, QLSELB, QLSELBS, QPM, QPMA, QPMB, QPMBS Class B Conductor & Flexible Conductor (Instrumentation Cables) Model: C*PN, C*PNA, C*PNB, C*PNBS, C*LSEL, C*LSELA, C*LSELB, C*LSELBS, C*PM, C*PMA, C*PMB, C*PMB, C(OS)*PN, C(OS)*PNA, C(OS)*PNB, C(OS)*PNBS, C(OS)*LSEL, C(OS)*LSELA, C(OS)*LSELB, C(OS)*LSELBS, C(OS)*PM, C(OS)*PMA, C(OS)*PMB, C(OS)*PMB, C(OS)*PMB, C(OBS)*PN, C(OBS)*PNA, C(OBS)*PNB, C(OBS)*PNBS, C(OBS)*LSEL, C(OBS)*LSELA, C(OBS)*LSELB, C(OBS)*LSELBS, C(OBS)*PM,

C(OBS)*PMA, C(OBS)*PMB, C(OBS)*PMBS Class B Conductor & Flexible Conductor (Signal Cables) Model: TP(OS)*PN, TP(OS)*PNA, TP(OS)*PNB, TP(OS)*PNBS, TP(OS)*LSEL, TP(OS)*LSELA, TP(OS)*LSELB, TP(OS)*LSELBS, TP(OS)*PM, TP(OS)*PMA, TP(OS)*PMB, TP(OS)*PMBS, TP(OBS)*PN, TP(OBS)*PNA, TP(OBS)*PNB, TP(OBS)*PNBS, TP(OBS)*LSEL, TP(OBS)*LSELA, TP(OBS)*LSELB, TP(OBS)*LSELBS, TP(OBS)*PM, TP(OBS)*PMA, TP(OBS)*PMB, TP(OBS)*PMBS TP(I/S)*PN, TP(I/S)*PNA, TP(I/S)*PNB, TP(I/S)*PNBS, TP(I/S)*LSEL, TP(I/S)*LSELA, TP(I/S)*LSELB, TP(I/S)*LSELBS, TP(I/S)*PM, TP(I/S)*PMA, TP(I/S)*PMB, TP(I/S)*PMBS TP(I/S-OS)*PN, TP(I/S-OS)*PNA, TP(I/S-OS)*PNB, TP(I/S-OS)*PNBS, TP(I/S-OS)*LSEL, TP(I/S-OS)*LSELA, TP(I/S-OS)*LSELB, TP(I/S-OS)*LSELBS, TP(I/S-OS)*PM, TP(I/S-OS)*PMA, TP(I/S-OS)*PMB, TP(I/S-OS)*PMBS, TT(OS)*PN, TT(OS)*PNA, TT(OS)*PNB, TT(OS)*PNBS, TT(OS)*LSEL, TT(OS)*LSELA, TT(OS)*LSELB, TT(OS)*LSELBS, TT(OS)*PM, TT(OS)*PMA, TT(OS)*PMB, TT(OS)*PMBS TT(I/S-OS)*PN, TT(I/S-OS)*PNA, TT(I/S-OS)*PNB, TT(I/S-OS)*PNBS, TT(I/S-OS)*LSEL, TT(I/S-OS)*LSELA, TT(I/S-OS)*LSELB, TT(I/S-OS)*LSELBS, TT(I/S-OS)*PM, TT(I/S-OS)*PMA, TT(I/S-OS)*PMB, TT(I/S-OS)*PMBS 2) Fire Resistant Type Same as flame retardant type but prefix FS- is added to each type. - Insulation: Type P, Type LSE (IEEE 1580-2001/45-1998), Type X110 (UL 1309-1995) and Type X (IEEE 45-1983) - Jacket: Type N, Type L (IEEE 1580-2001/45-1998), Type M (Mud Resistant: IEC 60092-359 SHF2, NEK 606-1997) - Optional aluminum or bronze armor and optional individual or overall shield - Max. operating conductor temperature: 100 Deg. C - Flammability: Sec. 5.17.5 of IEEE 1580-2001, Sec. 8.13.4 of IEEE 45-1998, IEC 60332-3 category A - Cold bend (-40 Deg. C) & cold impact (-35 Deg. C) of CSA C22.2 No.03

Ratings:

Class B Conductor (Distribution Cables): 600V or 2KV, Conductor Size: 14 AWG through 1000 MCM, No. of cores: 1 through 5 Class B Conductor (Instrumentation Cables): 600V, Conductor size: 20 through 10 AWG, No. of cores: 2 through 91 Class B Conductor (Signal Cables): 600V, Conductor size: 20 through 14 AWG, No. of pairs: 1 through 24, No. of triad: 1 through 24 Flexible Conductor (Distribution Cables): 600V or 2KV, Conductor Size: 14 AWG through 1111 MCM, No. of cores: 1 through 5 Flexible Conductor (Instrumentation Cables): 600V, Conductor size: 20 through 10 AWG, No. of cores: 2 through 91 Flexible Conductor (Signal Cables): 600V, Conductor size: 22 through 14 AWG, No. of pairs: 1 through 24, No. of triad: 1 through 16

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Approval is based on tests carried out by Intertek Testing Services NA Inc.

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This Design Assessment Certificate number 02-BK331190/2-PDA, dated 19/Jun/2007 will expire on 18/Jun/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules:

2007 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9, 2001 MODU Rule 4-3-4/13.1

National Standards:

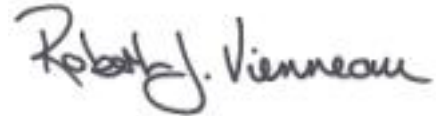
IEEE 45-1998, IEEE 45-1983, IEEE 1580-2001, IEEE 1202-1991, UL-1309, CSA C22- No.03, NEK 606-1997 as applicable.

International Standards:

IEC 60092-359, 60332-3, 60331 as applicable.

Government Authority:**EUMED:****Others:**

Manufacturer's specification JSSIE-02046, JSSIE-02047 & JSSIE-02046(Appendix 1)



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 11/DEC/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

JS CABLE CO., LTD.

Model Name(s): 5 kV, 8 kV, 15 kV Marine Shipboard Cables - See Description

Presented to:

JS CABLE CO., LTD.
569, BOSEONG-RI
PUNGSE-MYEON
CHEONAN-SI
Chungcheongnam-Do
Korea, Republic of

Intended Service:

Class B Conductor (Distribution Cables): Power, lighting and heat tracing circuits
Flexible Conductor (Distribution Cables): Power, lighting and heat tracing circuits

Description:

1) Flame Retardant Type Class B Conductor & Flexible (Distribution Cables)
Model: 5KV, 8KV, 15KV: SEN(BS), SEL(BS), TEN(BS), TEL(BS) 2) Fire Resistant Type Same as flame retardant type but prefix FS- is added to each type. 3) Three Core Cable with Grounding Conductor Same as flame retardant and fire resistant types, but suffix "G" is added - Insulation: Type E (IEEE 1580-2001/45-1998), Type E90 (UL 1309-1995) - Jacket: Type N, Type L (IEEE 1580-2001/45-1998) - Bronze armored & sheathed - Max. operating conductor temperature: 90 Deg. C - Flammability: Sec. 5.17.5 of IEEE 1580-2001, Sec. 8.13.4 of IEEE 45-1998 IEC 60332-3 category A - Cold bend (-40 Deg. C) & cold impact (-35 Deg. C) of CSA C22.2 No.03

Ratings:

5KV: Conductor size: 8AWG through 1111MCM, No. of cores: 1 ,3 Insulation level: 100 %, 133 % 8KV: Conductor size: 6AWG through 1111MCM, No. of cores: 1 ,3 Insulation level: 100 %, 133 % 15KV: Conductor size: 2AWG through 1111MCM, No. of cores: 1 ,3 Insulation level: 100 %, 133 % Three core cables may be produced with grounding conductor, suffix "G" is added to the cable type

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Approval is based on tests carried out by Intertek Testing Services NA Inc.

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use

on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This Design Assessment Certificate number 02-BK333043/1-PDA, dated 19/Jun/2007 will expire on 18/Jun/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules:

2007 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9, 2001 MODU Rule 4-3-4/13.1

National Standards:


IEEE 45-1998, IEEE 1580-2001, IEEE 1202-1991, UL-1309, UL-1072, CSA C22-No.03, ICEA S-68-516, NEMA WC 8 1998

International Standards:

IEC 60092-3, 60332-3, 60331 as applicable.

Government Authority:**EUMED:****Others:**

Manufacturer's specification JSSIE-02044-1 & JSSIE 02045-1



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 11/DEC/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

JS CABLE CO., LTD.

Model Name(s): Class B & Flexible Conductor

Presented to:

JS CABLE CO., LTD.
569, BOSEONG-RI
PUNGSE-MYEON
CHEONAN-SI
Chungcheongnam-Do
Korea, Republic of

Intended Service:

Class B Conductor (Distribution Cables): Power, lighting and heat tracing circuits
Class B Conductor (Instrumentation Cables): Control and instrumentation circuits
Class B Conductor (Signal Cables): Control, instrumentation, communication and alarm circuits
Flexible Conductor (Distribution Cables): Power, lighting and heat tracing circuits
Flexible Conductor (Instrumentation Cables): Control and instrumentation circuits
Flexible Conductor ((Signal Cables): Control, instrumentation, communication and alarm circuits

Description:

Class B Conductor (Distribution Cables) Model: 2KV: SP 2KV(HD), SPA 2KV(HD), SPB 2KV (HD), SPBS 2KV (HD) DPN 2KV(HD), DPNA 2KV(HD), DPNB 2KV (HD), DPNBS 2KV (HD) TPN 2KV(HD), TPNA 2KV(HD), TPNB 2KV (HD), TPNBS 2KV (HD) FPN 2KV(HD), FPNA 2KV(HD), FPNB 2KV (HD), FPNBS 2KV (HD) 600V: SP, SPA, SPB, SPBS, DPN, DPNA, DPNB, DPNBS TPN, TPNA, TPNB, TPNBS, FPN, FPNA, FPNB, FPNBS QPN, QPNA, QPNB, QPNBS Class B Conductor (Instrumentation Cables) Model: C*PN, C*PNA, C*PNB, C*PNBS C(OS)*PN, C(OS)*PNA, C(OS)*PNB, C(OS)*PNBS C(OBS)*PN, C(OBS)*PNA, C(OBS)*PNB, C(OBS)*PNBS Class B Conductor (Signal Cables) Model: TP(OS)*PN, TP(OS)*PNA, TP(OS)*PNB, TP(OS)*PNBS TP(OBS)*PN, TP(OBS)*PNA, TP(OBS)*PNB, TP(OBS)*PNBS TP(I/S)*PN, TP(I/S)*PNA, TP(I/S)*PNB, TP(I/S)*PNBS TP(I/S-OS)*PN, TP(I/S-OS)*PNA, TP(I/S-OS)*PNB, TP(I/S-OS)*PNBS TT(OS)*PN, TT(OS)*PNA, TT(OS)*PNB, TT(OS)*PNBS TT(I/S-OS)*PN, TT(I/S-OS)*PNA, TT(I/S-OS)*PNB, TT(I/S-OS)*PNBS Flexible Conductor (Distribution Cables) Model: 2KV: SP2KV(HD), SPA 2KV(HD) SPB

2KV(HD) SPBS 2KV(HD) 600V: SP, SPA, SPB, SPBS, DPN, DPNA, DPNB, OPNBS TPN, TPNA, TPNB, TPNBS, FPN, FPNA, FPNB, FPNBS QPN, QPNA, QPNB, QPNBS Flexible Conductor (Instrumentation Cables) Model: C*PN, C*PNB, C*PNA, C*PNBS, C(OS)*PN, C(OS)*PNB, C(OS)*PNA, C(OS)*PNBS, C(OBS)*PN, C(OBS)*PNB, C(OBS)*PNA, C(OBS)*PNBS Flexible Conductor (Signal Cables) Model: TP(OS)*PN, TP(OS)*PNB, TP(OS)*PNA, TP(OS)*PNBS, TP(OBS)*PN, TP(OBS)*PNB, TP(OBS)*PNA, TP(OBS)*PNBS, TP(I/S)*PN, TP(I/S)*PNB, TP(I/S)*PNA, TP(I/S)*PNBS, TP(I/S-OS)*PN, TP(I/S-OS)*PNB, TP(I/S-OS)*PNA, TP(I/S-OS)*PNBS, TT(OS)*PN, TT(OS)*PNB, TT(OS)*PNA, TT(OS)*PNBS, TT(I/S-OS)*PN, TT(I/S-OS)*PNB, TT(I/S-OS)*PNA, TT(I/S-OS)*PNBS Marine shipboard cables complying cross-linked polyolefin insulation and neoprene jacket with optional aluminum or bronze braided armor and optional overall neoprene sheath and optional individual or overall screen. Max. operating conductor temperature: 100 degree C Flammability: Section 8.13.4 of IEEE 45-1998, IEC 60332-3 Category A

Ratings:

Class B Conductor (Distribution Cable): 600V or 2KV, Conductor sizes: 14 AWG through 1000 MCM: No. of cores: 1 through 4, 14 AWG through 4/0 AWG: No. of cores: 5 Class B Conductor (Instrumentation Cables): 600V, Conductor Sizes: 20 AWG through 10 AWG, No. of cores: 2 through 91 Class B Conductor (Signal Cable): 600V, Conductor Sizes: 20, 18, 16 AWG, No of pairs: 1 through 24, No. of triads: 1 through 24 Flexible Conductor (Distribution Cables): 600V or 2KV, Conductor sizes: 8 AWG through 1111 MCM, No. of cores: 1 through 5 Flexible Conductor (Instrumentation Cables): 600V, Conductor sizes: 20 AWG through 10 AWG, No. of cores: 2 through 91 Flexible Conductor (Signal Cables): 600V, Conductor sizes: 22 AWG through 12 AWG, No. of pairs: 1 through 24 No. of triads: 1 through 16

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Approval is based on tests carried out by Intertek Testing Services NA Inc.

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This Design Assessment Certificate number 02-BK265598/1-PDA, dated 26/Jul/2007 will expire on 25/Jul/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules:

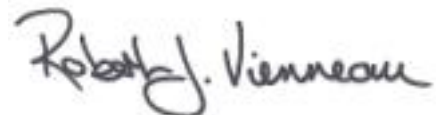
2007 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9, 2001 MODU Rule 4-3-4/13

National Standards:**International Standards:**

IEEE45-1998, IEC Pub60092-3

Government Authority:**EUMED:****Others:**

Manufacturer Specification, JSSIE-01055 dated 10 November 2001



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 12/AUG/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

JS CABLE CO., LTD.

Model Name(s): 5 kV, 8 kV, 15 kV Marine Shipboard Cables - See Description

Presented to:

JS CABLE CO., LTD.
569, BOSUNG-RI
PUNGSAE-MYUN
CHUNWON-KUN
Korea, Republic of

Intended Service:

Class B Conductor (Distribution Cables): Power, lighting and heat tracing circuits
Flexible Conductor (Distribution Cables): Power, lighting and heat tracing circuits

Description:

1) Flame Retardant Type Class B Conductor & Flexible (Distribution Cables)
Model: 5KV, 8KV, 15KV: SEN(BS), SEL(BS), TEN(BS), TEL(BS) 2) Fire Resistant Type Same as flame retardant type but prefix FS- is added to each type. 3) Three Core Cable with Grounding Conductor Same as flame retardant and fire resistant types, but suffix "G" is added - Insulation: Type E (IEEE 1580-2001/45-1998), Type E90 (UL 1309-1995) - Jacket: Type N, Type L (IEEE 1580-2001/45-1998) - Bronze armored & sheathed - Max. operating conductor temperature: 90 Deg. C - Flammability: Sec. 5.17.5 of IEEE 1580-2001, Sec. 8.13.4 of IEEE 45-1998 IEC 60332-3 category A - Cold bend (-40 Deg. C) & cold impact (-35 Deg. C) of CSA C22.2 No.03

Ratings:

5KV: Conductor size: 8AWG through 1111MCM, No. of cores: 1, 3 Insulation level: 100 %, 133 % 8KV: Conductor size: 6AWG through 1111MCM, No. of cores: 1, 3 Insulation level: 100 %, 133 % 15KV: Conductor size: 2AWG through 1111MCM, No. of cores: 1, 3 Insulation level: 100 %, 133 % Three core cables may be produced with grounding conductor, suffix "G" is added to the cable type

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Approval is based on tests carried out by Intertek Testing Services NA Inc.

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under

contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity: This Design Assessment Certificate number 02-BK333043/1-PDA, dated 19/Jun/2007 will expire on 18/Jun/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules: 2007 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9, 2001 MODU Rule 4-3-4/13.1

National Standards: IEEE 45-1998, IEEE 1580-2001, IEEE 1202-1991, UL-1309, UL-1072, CSA C22-No.03, ICEA S-68-516, NEMA WC 8 1998

International Standards: IEC 60092-3, 60332-3, 60331 as applicable.

Government Authority:

EUMED:

Others: Manufacturer's specification JSSIE-02044-1 & JSSIE 02045-1



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.