

行政院及所屬各機關出國報告
(出國類別：其他)

龍門計畫國外製造機械設備製程中品質查驗


服務機關：台灣電力公司核能安全處
出國人職稱：主管
姓名：邱雲長
出國地區：韓國
出國期間：95年4月3日至95年4月14日
報告日期：95年5月29日

行政院及所屬各機關出國報告審核表

出國報告名稱：龍門計畫國外製造機械設備製程中品質查驗	
出國計畫主辦機關名稱：台灣電力股份有限公司	
出國人姓名/職稱/服務單位：邱雲長/主管/核能安全處	
出國計畫 主辦機關 審核意見	<input checked="" type="checkbox"/> 1. 依限繳交出國報告 <input checked="" type="checkbox"/> 2. 格式完整 <input checked="" type="checkbox"/> 3. 內容充實完備。 <input checked="" type="checkbox"/> 4. 建議具參考價值 <input checked="" type="checkbox"/> 5. 送本機關參考或研辦 <input type="checkbox"/> 6. 送上級機關參考 <input type="checkbox"/> 7. 退回補正，原因： <input type="checkbox"/> (1) 不符原核定出國計畫 <input type="checkbox"/> (2) 以外文撰寫或僅以所蒐集外文資料為內容 <input type="checkbox"/> (3) 內容空洞簡略 <input type="checkbox"/> (4) 未依行政院所屬各機關出國報告規格辦理 <input type="checkbox"/> (5) 未於資訊網登錄提要資料及傳送出國報告電子檔 <input type="checkbox"/> 8. 其他處理意見
層轉機關 審核意見	<input type="checkbox"/> 同意主辦機關審核意見 <input type="checkbox"/> 全部 <input type="checkbox"/> 部分 _____ (填寫審核意見編號) <input type="checkbox"/> 退回補正，原因： _____ (填寫審核意見編號) <input type="checkbox"/> 其他處理意見：

說明：

- 一、 出國計畫主辦機關即層轉機關時，不需填寫「層轉機關審核意見」。
- 二、 各機關可依需要自行增列審核項目內容，出國報告審核完畢本表請自行保存。
- 三、 審核作業應於報告提出後二個月內完成。

報告人 

單位
主管：

主管處
主 管

總經理
副總經理：

Handwritten signature and date: 06/01


蔣信弘


95.6.1
姚俊全



行政院及所屬各機關出國報告提要

出國報告名稱：龍門計畫國外製造機械設備製程中品質查驗

頁數 38 含附件：是否

出國計畫主辦機關/聯絡人/電話：台灣電力公司/陳德隆(人事處)/02-23667685

出國人員姓名/服務機關/單位/職稱/電話：邱雲長/台灣電力公司/核能安全處/
主管/02-23667187

出國類別：1 考察2 進修3 研究4 實習5 其他（洽公）

出國期間：95/4/3~95/4/14

出國地區：韓國

報告日期：95/5/29

分類號/目：

關鍵詞：

內容摘要：本項出國計畫為依據龍門計畫 ASME Sec. III 核能級管路採購合約 (8749311M01800) 之規定，對得標廠商韓國 Doosan 公司及其分包廠商 TK、Sungkwang Bend 及 Daekwang Tech. 等公司，執行核能級管件製程中品質查驗，包括停留檢驗點及見證檢驗點之執行、製造程序之查證、材料之標示、包裝與儲存之查證、不符合事項之處理、裝運前之最終檢驗及相關品質紀錄之審查等。查驗結果有 19 件 Shear Lug，發現材料之 Heat No. 標識錯誤，已簽發不符合報告(NCR) 處理，以及有 35 支管節之品質紀錄，發現有一些疏失，其他均能符合採購規範品質要求。本次查驗所發現之品質紀錄疏失事項，廠商已立即配合改正完成。

龍門計畫國外製造機械設備製程中品質查驗

摘 要

本項出國計畫為依據龍門計畫 ASME Sec. III 核能級管路採購合約 (8749311M01800) 之規定，對得標廠商韓國 Doosan 公司及其分包廠商 TK、Sungkwang Bend 及 Daekwang Tech. 等公司，執行核能級管件製程中品質查驗，包括停留檢驗點及見證檢驗點之執行、製造程序之查證、材料之標示、包裝與儲存之查證、不符合事項之處理、裝運前之最終檢驗及相關品質紀錄之審查等。查驗結果有 19 件 Shear Lug，發現材料之 Heat No. 標識錯誤，已簽發不符合報告(NCR)處理，以及有 35 支管節之品質紀錄，發現有一些疏失，其他均能符合採購規範品質要求。本次查驗所發現之品質紀錄疏失事項，廠商已立即配合改正完成。

龍門計畫國外製造機械設備製程中品質查驗

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壹、出國任務說明

本項出國計畫為依據龍門計畫 ASME Sec. III核能級管路採購合約 (8749311M01800)之規定，對得標廠商韓國 Doosan 公司及其分包廠商 TK、Sungkwang Bend 及 Daekwang Tech. 等公司，執行核能級管件製程中品質查驗，包括停留檢驗點及見證檢驗點之執行、製造程序之查證、材料之標示、包裝與儲存之查證、不符合事項之處理、裝運前之最終檢驗及相關品質紀錄之審查等。

貳、出國行程

95.4.3 ~ 95.4.3	台北----釜山----昌原	往 程
95.4.4 ~ 95.4.6	昌原 Doosan 公司	執行品質查驗 (6日公畢往釜山)
95.4.7 ~ 95.4.13	釜山 Sungkwang、TK、 Daekwang 公司	執行品質查驗
95.4.14 ~ 95.4.14	釜山-----台北	返 程

參、核能級管件製程中品質查驗工作報告

一、查驗項目及數量

本次查驗項目及數量包括：

Unit 1 Shop fabricated pipe(BOP)：9 pieces
Loose Part (BOP)：BOQ 部份：227 pieces
Non- BOQ 部份：558 pieces

Unit 2 Shop fabricated pipe(BOP)：101 pieces
6% moly straight welded pipe(BOP)：14 pieces
Loose Parts (BOP)：BOQ 部份：637 pieces
Non- BOQ 部份：327 pieces

二、查驗廠商及方式

本次查驗廠商及其主要作業項目包括：

1. Doosan 公司(合約廠商): Shop fabricated pipe, Loose Parts
2. TK 公司(分包廠商): 5D bend 6% moly welded pipe
3. Sungkwang 公司(分包廠商): Small bore Fitting, Loose Parts
4. Daekwang 公司(分包廠商):Cleaning & packing service

查驗進行方式，主要包括：

1. 查驗相關文件及其修訂情況。
2. 查證核能級管件之製造、標識、儲存、清潔和 Shipping Preparation 狀況。
3. 審查核能級管件之品質文件及紀錄之正確、完整性。

三、查驗相關文件及其修訂情況

與 Doosan 公司之 Mr.Seon-Kon Ryu 查對目前工作依據之相關文件，主要包括：

1. TPC-Doosan Contract 8749311M01800
2. Procurement Spec. for Shop Fabricated Piping—ASME III,Class 2,3(Spec. No.874-M0029,Rev.5, Amendment No.2)
3. Procurement Spec. for 50mm and Smaller Piping and Fittings—ASME III,Class 1,2,3(Spec. No. 31113.62.2220,Rev.4, Amendment No.1)
4. Doosan 公司 QA Manual (QM-200, Rev.6)
5. Inspection and Test Plan (874-M0029, Rev.5)
6. Inspection and Test Plan (31113.62.2220, Rev.1)
7. Sub-contractors' Inspection and Test Plan (Rev.1)
8. QA Record list(Rev.0)
9. 相關規範、標準及程序書(詳附件二)

四、至 95.4.13 之核能級管件製造進度如下：

1. BOP 部份：

(1) Shop fabricated pipe(包括 2.5D/5D Bend pipe)：

	<u>一號機</u>	<u>二號機</u>	<u>總計</u>
Total Spools：	611	613	1224
PQC Issued：	581(95%)	393(64%)	974(80%)
Shipped：	564(92%)	267(44%)	831(68%)

(2)：6% moly straight welded pipe：

	<u>一號機</u>	<u>二號機</u>	<u>總計</u>
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Total Spools :	690	591	1281
PQC Issued :	690(100%)	591(100%)	1281(100%)
Shipped :	690(100%)	553(94%)	1243(97%)

2. BONI 部份 :

(1) Pipe :

	<u>一號機</u>	<u>二號機</u>	<u>總計</u>
Total Q'ty(m) :	20374	20374	40748
PQC Issued :	20374(100%)	20374(100%)	40748(100%)
Shipped :	20374(100%)	20374(100%)	40748(100%)

(1) Fitting :

	<u>一號機</u>	<u>二號機</u>	<u>總計</u>
Total Pieces :	5428	5428	10856
PQC Issued :	5428(100%)	5428(100%)	10856(100%)
Shipped :	5428(100%)	5428(100%)	10856(100%)

五、製程中品質查驗工作概述

1. Shop fabricated pipe 部分 :

- (1) 現場抽查 Spool No. 2P26LSP5032Y2-1, 2P26LSH5020Y2-1 , 2P26LSP5007Y2-1, 2P26LSP5033Y2-1, 2P26LSB5008Y2-1 , 2P26LSH5021Y2-1 等管節製造之 Pipe 對 Reducer 之銲道銲接及 NDE 檢驗作業。核對 Spool Dwg. 、Weld No. (SW-7) 、母材材質(Pipe:SB675, Reducer:SB366-WP6XNW)、使用之銲材(HT No.:CE8347)、銲接人員(Welder ID.: UZV)資格、PT Report(No.P060405-018-001) 及 Shop Traveler 紀錄，均無不符合情況發現。
- (2) 現場抽查 Spool No.2P26LSU5048Y1-2 及 2P26LSU5049Y1-2 管節之 Name Plate 銲接。核對 Name Plate 標識及材質、使用之銲材、銲接人員資格等，均符合要求。

2. 對管節、管件 Stamping, Cleaning, Coating, Marking, 及 Shipping Preparation 之查驗情形 :

- (1) Shop fabricated pipe、5D bend 6% moly welded pipe、及 6% moly straight welded pipe 等共 124 支管節。100% 查對每支管節標識，包括：Code Nameplate, Spool No., NPT Stamp 等，查驗結果全部管節均按照規定標識。另依照 ITP 規定，隨機抽驗 6 支管節 (不超過 5%)，要求廠商拆除包裝做 Dimension、Inside

Surface Condition、Packing Condition 之目視檢查。檢查結果無不符合情況發現，各管節均經清潔、乾燥後，於管內放入乾燥劑，管端蓋上 Cap 並以膠帶密封，整支管節再裝入塑膠袋中密封，貼上 ID Marking 及附上 Packing List，大支的管節以木框固定，小支的管節則裝入木箱，放置於露天儲存場，上面覆蓋防雨膠布等候交運。

(2) Loose Parts: Unit 1 及 Unit 2 之 BOQ 部份共 864 件, Non- BOQ 部份共 885 件。100% 檢查 Loose Parts 之規格、標識及 Packing Condition。檢查結果 Unit 1 Non- BOQ 部份之 Shear Lug (Contract No.: A.b.P26.1.43) 162 件中，發現有 19 件標識之材料 Heat No. 錯誤，已將其剔除並要求廠商簽發不符合報告 (NCR) 處理(詳附件三)，其餘未發現有不符情況。包裝則將各項 Loose Part 裝入塑膠袋後，再按 Unit 1/ Unit 2 及 BOQ/ Non- BOQ 部份，分開裝入鋪設塑膠布之大木箱中，放入乾燥劑，以膠帶密封，貼上 ID Marking 及附上 Packing List，儲存於工場內等候交運，未發現有不符情況。

(3) 上述 19 件 Shear Lug，廠商將磨除錯誤之 Heat No. 後，重新打上正確的 Heat No.，併入下一批檢驗及交運。

六、審查核能級管件之品質紀錄文件

審查各核能級管節、管件之 QRP(Quality Record Package)，包括：Certificate of Conformance, Code Data Report, CMTR, NDE Reports, Dimension Inspection Report, Shop Traveler, As-built Drawing, NUC/NCR, 等，總計審查 Shipment No.52~62 共 11 份 Product Quality Certificate(PQC) 所包含之 124 支管節、1749 件 Loose Parts 之品質紀錄文件(詳附件四)。審查結果除下列 QRP 發現有疏失外，其餘 Package 均無不符合狀況發現。有問題之 QRP 並均已於本次查驗工作期間完成改正。

1. Spool No. 1P26LSB5002Y2-4, 1P26LSH5015Y2-4,
1P26LSN5027Y1-1, 1P26LSP5028Y2-4, 1P26LSR5034Y1-1,
2P26LSH5015Y1-4, 2P26LSH5015Y3-1, 2P26LSP5028Y1-4 等 9
支管節，發現 Shop Traveler 上將 Flange 之 CMTR No. 誤植為
QA-060303-1-3。(已將 CMTR No. 更正為 QA-060303-01)

2. Spool No. 2P26LST5037Y1-2, 2P26LSU5233Y1-1,
2P26LSU5235Y1-1, 2P26LSU5236Y1-1, 2P26LSU5237Y1-1,
2P26LSU5238Y1-1, 2P26LSU5248Y1-1, 2P26LSU5249Y1-1,

2P26LSU5250Y1-1, 2W12LSA5003Y5-1, 2W12LSA5100Y1-1, 2W12LSA5100Y1-3, 2W12LSB5006Y5-1, 2W12LSB5101Y1-1, 2W12LSB5101Y1-3, 2W12LSC5008Y1-3, 2W12LSC5009Y5-1, 2W12LSC5102Y1-1, 2W12LSC5102Y1-3 等 19 支管節，發現 QRP 中檢附 2 張 Flange 之 CMTR，但 Shop Traveler 上僅記錄 1 張 Flange 之 CMTR No.。(已將漏列之 CMTR No. QA-050726-10 補記入 Shop Traveler 中)

3. Spool No. 1B21LSA5007-1, 1B21LSA5008-1 等 2 支管節之 MT Report，未註明對 Joint No.:ATT-1、ATT-2、ATT-3 執行 MT 檢測時是否包括 B2 及 B10 鐸道。(已查明並於 MT Report 中加註包括 B2 及 B10 鐸道)
4. Spool No. 2P26LSH5017Y1-4, 2P26LSP5028Y3-1, 2P26LSP5030Y3-1 等 3 支管節，QRP 中多附 1 張 無關的 CMTR。(已將無關的 CMTR No.: QA-060225-02 抽除)
5. Spool No. 2P26LSH5017Y3-1, QRP 中之 Page 35~41 與 Page 28~34 重複。(已將 Page 35~41 抽除)
6. Spool No. 2P26LSF5012Y2-2, 2P26LSK5022Y2-1 等 2 支管節，Shop Traveler 之"Name Plate Fit-up"為 QC Hold Point，但無 QC 人員簽章。(已補送 QC 查證及簽章)

肆、出國期間所遭遇之困難與特殊事項

無。

伍、心得與建議

- 一、本次品質查驗完成後，本項核能級管路採購案原合約所剩餘之管節數量為 250 支及部份之 Loose Parts，依照交運計畫，原定 6 月底可完成全部管件之交運。目前因設計變更而必須增加管件項目及數量，增加部份預計 4 月底可完成議價及合約修訂。有關後續品質查驗工作之安排，經與 Doosan 相關人員討論後，原則上以 2 個月一次，須於 6 月、8 月、10 月再派員執行 3 次檢驗工作。
- 二、現行由石威公司派員執行之品質查驗工作，其計價方式不論是行程、事前之準備及事後撰寫報告的人天(Man-day)數，均與實際執行檢驗工作採用相同的標準，似乎不很合理。以目前僅需 1 人天之品質查驗工作為例，本公司即須支付石威公司至少 5 人天(包括：行程 2 人天，事前準備及事後撰寫報

告各 1 人天)之全額費用。建議往後如有簽訂類似技術服務合約時，計價方式可考量實際情況來訂定不同的標準，例如對無在國外生活住宿的行程、事前準備及事後撰寫報告的人天數，以 4 折計算費用。

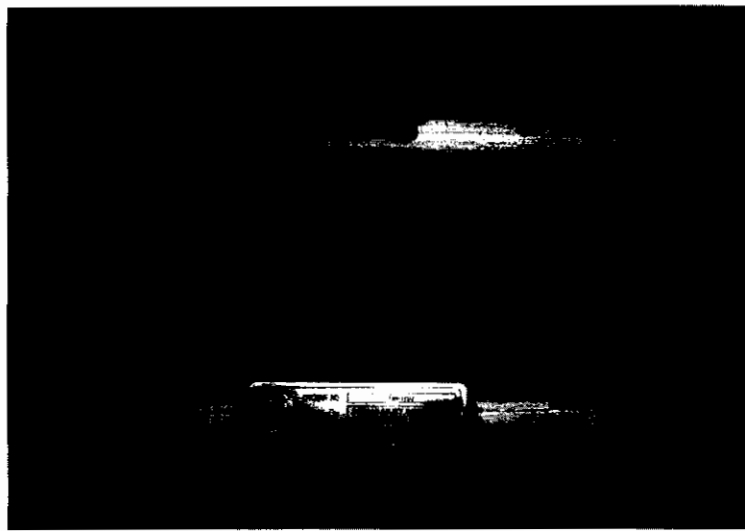
陸、附錄

- 附件一：品質查驗工作相關照片 (共 3 頁)
- 附件二：品質查驗工作相關規範、標準及程序書 (共 1 頁)
- 附件三：不符合報告(NCR) (共 1 頁)
- 附件四：Product Quality Certificate(PQC) (共 23 頁)

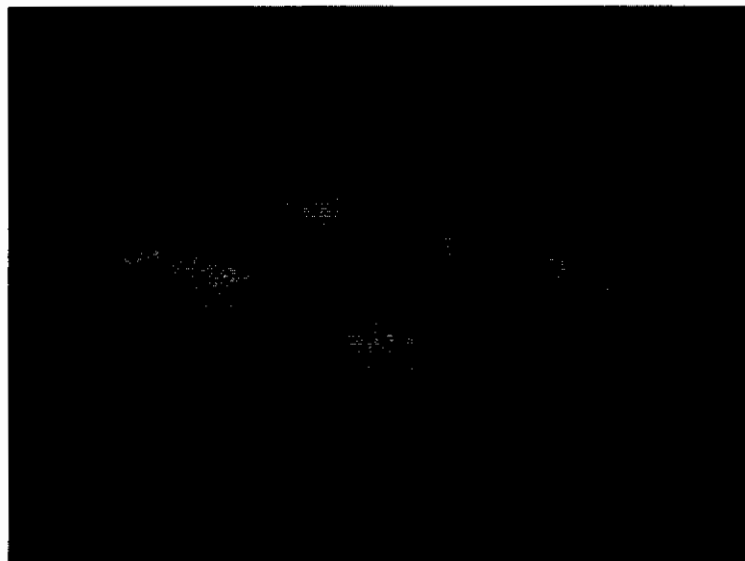
【附件一】



現場檢查 Shop
Fabricated Pipe 與
Reducer 銲道之銲
接及 NDE 檢驗



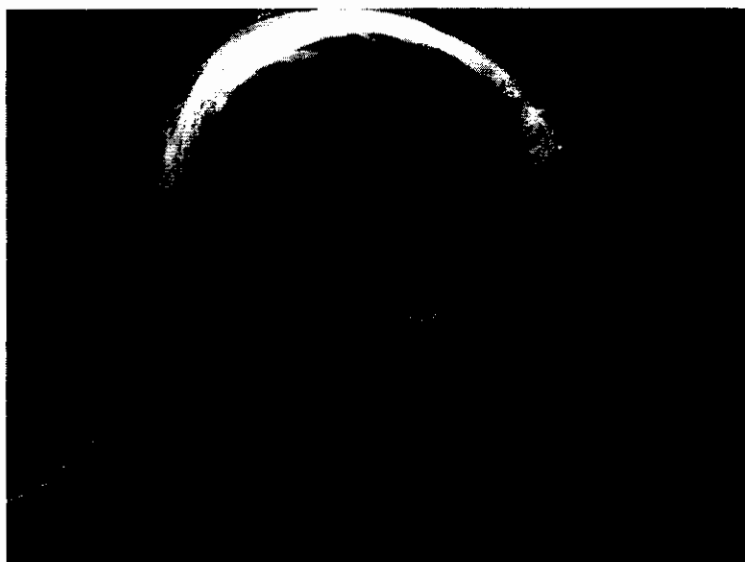
現場檢查 Shop
Fabricated Pipe 之
Name Plate 銲接
作業



檢查管節之包裝
情況



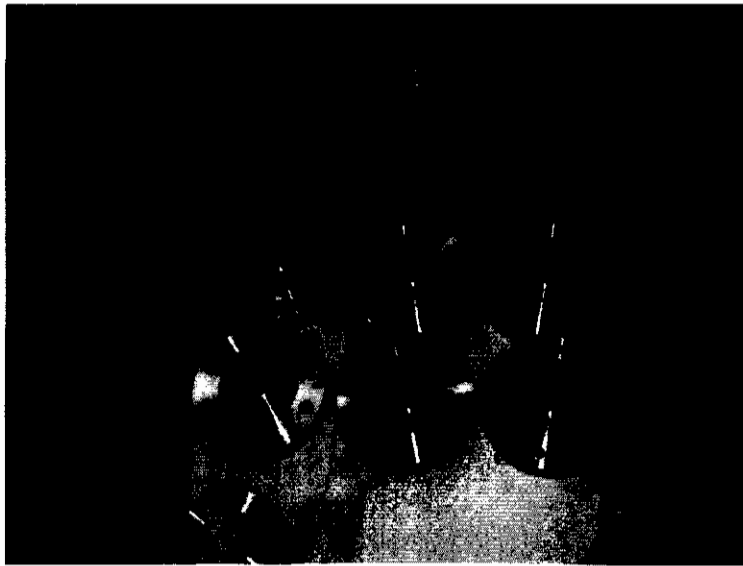
檢查管節之包裝情況



檢查管節之內部清潔情況



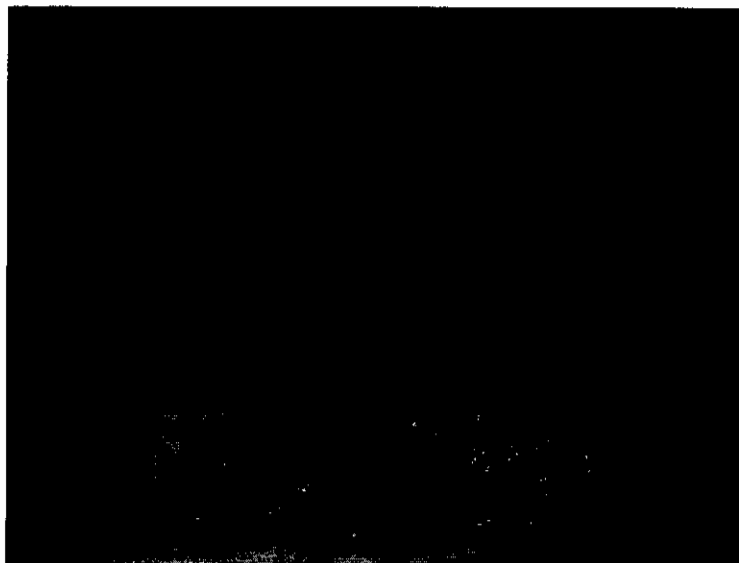
檢查管節之
Weld End
Preparation



查對 Loose Parts
(Flange)之規格
及標識



查對 Loose Parts
(Shear Lug)之爐
號(Heat No.)



查對 Loose Parts
(Nipple)之規格
及標識

DOCUMENT SUBMITTAL STATUS

C:\한국 유선교류용PIE_PIL_WorkIT04917_LungmentA03_Quality01_qa[1_main.xls]02

No.	Doc. No. 1	Doc. No. 2	Title	Rev	STS	Dept	Remark
L1	Doc. No. 1 : P1 문서번호이며, 형식은 "82055.MS018.X-xxxxx" 임. ""=82055.MS018."						
L2	Doc. No. 2 : Manufacturer's 문서번호						
L3	STS : Status(고객 검토 결과)						
1	QIM-200		QA Manual(Controlled Copy)	6	1	QA	
2	*4-00001		(ITP) Inspection and Test Plan	5	1	품질	
3	*4-00003		(ITP) ITP for Small Bore and Fittings	1	1	품질	
4	*4-00004		Quality Record List	0	1	품질	
5	*4-00005	PSAHCPCGH0003	Hydrostatic Test Procedure	1	1	품질	
6	*4-00006	PSAHCPCGFA0001	Wall Thickness measure. Procedure	1	1	품질	
7	*4-00002	PS-LM-RT001	NDE Procedure(RT)	1	1	NDE	
8	*4-00007	PS-LM-MT001	NDE Procedure(MT)	1	1	NDE	
9	*4-00008	PS-LM-PT001	NDE Procedure(PT)	1	1	NDE	
10	*4-00009	PS-LM-UT001	NDE Procedure(UT)	1	1	NDE	
11	*8-02004	PSAHCPCGWB0004	WPS and PQR	2	1	기술	
12	*8-02005	PSAHCPCGRE0004	Welding/Welding Repair Proc.	1	1	기술	
13	*8-02006	PSAHCPCGHA0004	PWHT Specification	1	1	기술	
14	*8-02002	PSZMAACL0001	Cleaning procedure(Large Bore)	3	1	출하	
15	*8-02007		Cleaning procedure(small bore)	1	1	출하	
16	*8-02009	PSAZMAAPT001	Painting Pcedure(Large Bore)	3	1	출하	
17	*8-02011		Painting Pcedure(Small Bore)	3	1	출하	
18	*8-02008	PSAHCPCGPS0004	Packing procedure(874-M0029)	1	1	출하	
19	(29)		Bending Procedure				
20			PFI Code (ES-24)			설계	
21	*5-02001-15		Fabrication Standard Details	2,3,5	1	설계	
22	*8-02039	PSAHCPCGWB0005	WPS and PQR	0		기술	
23	*8-02029	PSAHCPCGPS0005	Packing procedure for Small Bore	1		출하	
24							
1	*8-02044	PSAHCPCGKA0002	Marking Procedure	1	-	기술	
2	WIAHCPCGPK0001		Repacking after Internal Inspection for 6% Moly	0	-	기술	
3	PSAHCPCGZA0005		소모성 자재 관리절차서	0	-	기술	
4	WI-00P-RP-001		C/S, A/S 임시부착물 부착 및 제거 지침서	0	-	기술	
5	WI-98P-GE-001		스테인레스강 용접작업 지침서	0	-	기술	
6	WI-99P-GA-001		Ar Gas Back Purging 작업	0	-	기술	
7	WI-99P-FA-001		S/S 배관 Temporary Piece 부착/제거 작업지침	0	-	기술	
8	WI-91P-FA-002		배관 Butt Weld Joint의 가공 및 Fit-up 작업기준	0	-	기술	
1			Hot/Cold Bending & Forming Procedure				
2							
3			Filler Metal Control Procedure				
4			Welder Qualification Procedure				

Submittal Status[date format: mm-dd]

rev.0	sis	rev.1	sts	rev.2	sts	rev.3	sts	rev.4	sis	rev.5	sts	rev.6	sis
04-26	05-25												
05-25		06-21		07-09		05-02		05-16		07-04	07-21		
06-21		11-04	11-05										
06-21		07-26	08-03										
06-21		07-26	08-03										
06-15		10-29	11-05										
06-15		10-29	11-05										
06-15		10-29	11-05										
06-15		02-14	02-25										
07-02		08-12	09-24	02-14	03-15								
07-02		08-12	09-24										
07-02		08-12	09-24										
		10-04				05-13	06-25						
				02-18	04-07	04-08							
03-29													
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02-25		07-04											
05-02													
04-01													
04-01													
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04-01													

【附件二】

NONCONFORMANCE REPORT(NCR) 부 적 합 보 고 서			NCR NO: NCR_060283 Rev No.: 0 Date Found: 2006.04.07 발견일자			
Project : LUNG MEN NUCLEAR POWER PJT 사업명 (8749311M01800)			DWG No : N/A 도면번호			
M/O No : T04017M01 공사번호			Joint No: N/A 이음번호			
Item No/Name: Shop Fab Pipe Spool 제품번호/제품명			ITP No: 82055.MS018. 4-00001		Rev 5 개정	
Part No/Name: A.b.P26.1.45 / Shear Lug 부품번호/부품명			Oper No: - 공정번호			
Customer/Vendor: Taiwan Power Company 고객/업체			RICR No: - 수검번호			
Nonconforming Condition(부적합사항):						Attach(유/취) <input type="checkbox"/> Yes(유) <input checked="" type="checkbox"/> No(무)
Heat numbers were not recorded correctly in shear lug(Contract No.: A.b.P26.1.45, Q'ty: 19pcs) as following:						
Required	Actual	Q'ty				
818169M01	818169M0	17	**Size and Mtr'l : 65T x 105W x 370L / SB688			
818169M01	8181690	1				
818169M01	818169M08	1				
Prepared by <u>I.H.Lee</u>	<u>2006.04.07</u>	제일	-	불량부서	-	감사코드
작성자 (QC)DEPT	Date	수량	-	불량코드	-	지인일수
Recommended Disposition : <input type="checkbox"/> Use-as-is <input type="checkbox"/> Repair <input type="checkbox"/> Rework <input type="checkbox"/> Reject <input type="checkbox"/> Others						배부지
Recommended by _____						_____
제안자 ()DEPT			Date			_____
Reviewed & Approved by: _____						_____
검토자 ()DEPT			Date			_____
Corrective Action Required <input type="checkbox"/> Yes <input type="checkbox"/> No						_____
시정 조치 필요 CAR NO. _____						_____
Approved by: _____						_____
Accepted by: _____			Date			_____
수락자 Customer			Date			_____
Verified by _____						_____
최종 확인자 ()DEPT						Date
Verification of Final Disposition(최종확인)						Customer/ANI/AI
<input type="checkbox"/> Acceptable 합격						Date
<input type="checkbox"/> Not Acceptable 불합격						Date



**LUNG MEN PROJECT
RELEASE FOR SHIPMENT**

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 52
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA
PRODUCT Shop Fabricated ASME III Piping(All Size)		
DESCRIPTION		
<u>SUPPLIER'S CERTIFICATION</u>		
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.		
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>
Fabricated Pipe Spools	4 pcs	1
<u>Packing List No.</u>	<u>Remark</u>	
LM-MS018-053	-	
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.		
SIGNED <i>M. K. Kwon</i>	DATE <i>Apr. 6, '06</i>	
TITLE <i>General Manager</i>	SUPPLIER <i>Doosan Heavy Industries & Construction Co., Ltd.</i>	
<u>TPC REPRESENTATIVE CERTIFICATION¹</u>		
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."		
SIGNED <i>F. C. Chion</i>	DATE <i>Apr. 6, 2006</i>	
TITLE <i>QA Representative</i>	RFA NO. <i>NA</i>	
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS		

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Section 4. List of Supplied Spools

Packing List No. : LM-MS018-053

S/N	Drawing No	Rev	Spool No.	Doosan No
1	82055.MS018. 5-1200960	1	1B21LSA5006-1	DN-1636
2	82055.MS018. 5-1200964	1	1B21LSA5007-1	DN-1640
3	82055.MS018. 5-1200969	1	1B21LSA5008-1	DN-1645
4	82055.MS018. 5-1200973	1	1B21LSA5009-1	DN-1649

邱雲長

4-6-06



**LUNG MEN PROJECT
RELEASE FOR SHIPMENT**

Product Quality Certificate

CLIENT: Taiwan Power Company		TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 53
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)		REV. 5	ADDENDA
PRODUCT DESCRIPTION Shop Fabricated ASME III Piping(All Size)			
SUPPLIER'S CERTIFICATION			
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.			
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>	<u>Packing List No.</u> <u>Remark</u>
Fabricated Pipe Spools	4 pcs	2	LM-MS018-054 -
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.			
SIGNED <i>M. K. Ke</i>		DATE <i>Apr. 6, 06</i>	
TITLE General Manager		SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.	
TPC REPRESENTATIVE CERTIFICATION¹			
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."			
SIGNED <i>F. C. Chiu</i>		DATE <i>Apr. 6, 2006</i>	
TITLE <i>QA Representative</i>		RFA NO. <i>NA</i>	
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS			

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Section 4. List of Supplied Spools

Packing List No. : LM-MS018-054

S/N	Drawing No	Rev	Spool No	Doosan No
1	82055.MS018. 5-2201214	0	2B21-ANC-5801	DN-2640
2	82055.MS018. 5-2201213	0	2B21-ANC-5803	DN-2639
3	82055.MS018. 5-2201216	0	2B21-GUD-5802	DN-2642
4	82055.MS018. 5-2201215	0	2B21-GUD-5804	DN-2641

邱雲長

4-6-06



**LUNG MEN PROJECT
RELEASE FOR SHIPMENT**

Product Quality Certificate

CLIENT: Taiwan Power Company		TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 54
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)		REV. 5	ADDENDA
PRODUCT Shop Fabricated ASME III Piping(All Size)			
DESCRIPTION			
<u>SUPPLIER'S CERTIFICATION</u>			
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.			
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>	<u>Packing List No.</u> <u>Remark</u>
Fabricated Pipe Spools	20 pcs	2	LM-MS018-055 -
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.			
SIGNED <i>M. K. Kim</i>		DATE <i>Apr. 6, 2006</i>	
TITLE General Manager		SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.	
<u>TPC REPRESENTATIVE CERTIFICATION¹</u>			
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."			
SIGNED <i>Z. C. Chiu</i>		DATE <i>Apr. 6, 2006</i>	
TITLE <i>QA Representative</i>		RFA NO. <i>NA</i>	
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS			

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Section 4. List of Supplied Spools

Packing List No. : LM-MS018-055

S/N	Drawing No	Rev	Spool No	Doosan No
1	82055.MS018. 5-2201142	0	2P13LSX5038Y1-2	DN-2351
2	82055.MS018. 5-2201143	0	2P13LSX5038Y2-1	DN-2352
3	82055.MS018. 5-2201144	0	2P13LSX5038Y2-2	DN-2353
4	82055.MS018. 5-2201145	0	2P13LSX5038Y2-3	DN-2354
5	82055.MS018. 5-2201146	0	2P13LSX5038Y2-4	DN-2355
6	82055.MS018. 5-2201147	0	2P13LSX5038Y2-5	DN-2356
7	82055.MS018. 5-2201148	0	2P13LSX5038Y2-6	DN-2357
8	82055.MS018. 5-2201149	0	2P13LSX5038Y3-1	DN-2358
9	82055.MS018. 5-2201150	0	2P13LSX5038Y3-2	DN-2359
10	82055.MS018. 5-2201151	0	2P13LSX5038Y3-3	DN-2360
11	82055.MS018. 5-2201152	0	2P13LSX5038Y3-4	DN-2361
12	82055.MS018. 5-2201153	0	2P13LSX5038Y3-5	DN-2362
13	82055.MS018. 5-2201154	0	2P13LSX5038Y3-6	DN-2363
14	82055.MS018. 5-2201155	0	2P13LSX5038Y3-7	DN-2364
15	82055.MS018. 5-2201156	0	2P13LSX5038Y4-1	DN-2365
16	82055.MS018. 5-2201157	0	2P13LSX5038Y4-2	DN-2366
17	82055.MS018. 5-2201158	0	2P13LSX5038Y4-3	DN-2372
18	82055.MS018. 5-2201159	0	2P13LSX5038Y4-4	DN-2367
19	82055.MS018. 5-2201160	0	2P13LSX5038Y4-5	DN-2373
20	82055.MS018. 5-2201161	0	2P13LSX5038Y4-6	DN-2368

邱雲長

4-6-06



LUNG MEN PROJECT
RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 55
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA
PRODUCT DESCRIPTION Shop Fabricated ASME III Piping(All Size)		
SUPPLIER'S CERTIFICATION		
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.		
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>
Fabricated Pipe Spools	5 pcs	1
<u>Packing List No.</u>	<u>Remark</u>	
LM-MS018-056	-	
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.		
SIGNED <i>M. K. Kim</i>	DATE <i>Apr. 6. 06</i>	
TITLE General Manager	SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.	
TPC REPRESENTATIVE CERTIFICATION¹		
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."		
SIGNED <i>Z. C. Chion</i>	DATE <i>Apr. 6, 2006</i>	
TITLE <i>QA Representative</i>	RFA NO. <i>NA</i>	
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS		

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Section 4. List of Supplied Spools

Packing List No. : LM-MS018-056

S/N	Drawing No	Rev	Spool No	Doosan No
1	82055.MS018. 5-1201170	2	1P26LSB5002Y2-4	DN-230
2	82055.MS018. 5-1201182	2	1P26LSH5015Y2-4	DN-241
3	82055.MS018. 5-1201222	1	1P26LSN5027Y1-1	DN-383
4	82055.MS018. 5-1201194	2	1P26LSP5028Y2-4	DN-252
5	82055.MS018. 5-1201232	1	1P26LSR5034Y1-1	DN-404

鄧雲長

4-6-06



LUNG MEN PROJECT
RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 56										
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA										
PRODUCT Shop Fabricated ASME III Piping(All Size) DESCRIPTION												
SUPPLIER'S CERTIFICATION												
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.												
<table><thead><tr><th>Description</th><th>Q'ty</th><th>Unit</th><th>Packing List No.</th><th>Remark</th></tr></thead><tbody><tr><td>Fabricated Pipe Spools</td><td>67 pcs</td><td>2</td><td>LM-MS018-057</td><td>-</td></tr></tbody></table>			Description	Q'ty	Unit	Packing List No.	Remark	Fabricated Pipe Spools	67 pcs	2	LM-MS018-057	-
Description	Q'ty	Unit	Packing List No.	Remark								
Fabricated Pipe Spools	67 pcs	2	LM-MS018-057	-								
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.												
SIGNED <i>M. K. Lin</i>	DATE <i>Apr. 6, '06</i>											
TITLE General Manager	SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.											
TPC REPRESENTATIVE CERTIFICATION¹												
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."												
SIGNED <i>Z. C. Chiu</i>	DATE <i>Apr. 6, 2006</i>											
TITLE <i>QA Representative</i>	RFA NO. <i>NA</i>											
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS												

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Section 4. List of Supplied Spools

Packing List No. : LM-MS018-057

S/N	Drawing No	Rev	Spool No	Doosan No
1	82055.MS018. 5-2200371	0	2P26LSB5005Y24-1	DN-2374
2	82055.MS018. 5-2200380	0	2P26LSB5005Y25-4	DN-2375
3	82055.MS018. 5-2200728	1	2P26LSD5009Y1-10	DN-2521
4	82055.MS018. 5-2200724	0	2P26LSD5009Y1-6	DN-2522
5	82055.MS018. 5-2200725	0	2P26LSD5009Y1-7	DN-2523
6	82055.MS018. 5-2200730	0	2P26LSD5009Y3-2	DN-2526
7	82055.MS018. 5-2200731	0	2P26LSD5009Y3-3	DN-2569
8	82055.MS018. 5-2200433	0	2P26LSD5009Y5-3	DN-2376
9	82055.MS018. 5-2200441	0	2P26LSD5009Y7-1	DN-2527
10	82055.MS018. 5-2200444	0	2P26LSD5009Y7-4	DN-2528
11	82055.MS018. 5-2200707	1	2P26LSD5042Y1-4	DN-2513
12	82055.MS018. 5-2200904	0	2P26LSE5010Y2-1	DN-1725
13	82055.MS018. 5-2200905	0	2P26LSE5010Y2-2	DN-1726
14	82055.MS018. 5-2200909	0	2P26LSF5012Y2-1	DN-1969
15	82055.MS018. 5-2200910	0	2P26LSF5012Y2-2	DN-1970
16	82055.MS018. 5-2200787	0	2P26LSH5015Y1-4	DN-430
17	82055.MS018. 5-2200788	0	2P26LSH5015Y3-1	DN-431
18	82055.MS018. 5-2200792	0	2P26LSH5017Y1-4	DN-435
19	82055.MS018. 5-2200793	0	2P26LSH5017Y3-1	DN-436
20	82055.MS018. 5-2200460	0	2P26LSH5018Y24-1	DN-2377
21	82055.MS018. 5-2200469	0	2P26LSH5018Y25-4	DN-2378
22	82055.MS018. 5-2200477	0	2P26LSH5018Y27-1	DN-2529
23	82055.MS018. 5-2200480	0	2P26LSH5018Y27-4	DN-2530
24	82055.MS018. 5-2200149	1	2P26LSH5018Y7-5	DN-1999
25	82055.MS018. 5-2200925	0	2P26LSK5022Y2-1	DN-1740
26	82055.MS018. 5-2200926	0	2P26LSK5022Y2-2	DN-1741
27	82055.MS018. 5-2200930	0	2P26LSL5024Y2-1	DN-1745
28	82055.MS018. 5-2200931	0	2P26LSL5024Y2-2	DN-1746
29	82055.MS018. 5-2200750	1	2P26LSM5026Y1-10	DN-2531
30	82055.MS018. 5-2200746	0	2P26LSM5026Y1-6	DN-2532
31	82055.MS018. 5-2200747	0	2P26LSM5026Y1-7	DN-2533
32	82055.MS018. 5-2200751	0	2P26LSM5026Y3-1	DN-2536
33	82055.MS018. 5-2200518	0	2P26LSM5026Y4-1	DN-2379
34	82055.MS018. 5-2200526	0	2P26LSM5026Y5-3	DN-2380
35	82055.MS018. 5-2200534	0	2P26LSM5026Y7-1	DN-2538
36	82055.MS018. 5-2200537	0	2P26LSM5026Y7-4	DN-2539
37	82055.MS018. 5-2200711	1	2P26LSM5041Y1-4	DN-2516
38	82055.MS018. 5-2200797	0	2P26LSP5028Y1-4	DN-440
39	82055.MS018. 5-2200798	0	2P26LSP5028Y3-1	DN-441
40	82055.MS018. 5-2200803	0	2P26LSP5030Y3-1	DN-446
41	82055.MS018. 5-2200564	0	2P26LSP5031Y24-1	DN-2381
42	82055.MS018. 5-2200573	0	2P26LSP5031Y25-4	DN-2382
43	82055.MS018. 5-2200581	0	2P26LSP5031Y27-1	DN-2540
44	82055.MS018. 5-2200584	0	2P26LSP5031Y27-4	DN-2541
45	82055.MS018. 5-2200946	0	2P26LSS5035Y2-1	DN-1762
46	82055.MS018. 5-2200947	0	2P26LSS5035Y2-2	DN-1763
47	82055.MS018. 5-2200950	0	2P26LST5037Y1-2	DN-1766
48	82055.MS018. 5-2200951	0	2P26LST5037Y2-1	DN-1767
49	82055.MS018. 5-2200952	0	2P26LST5037Y2-2	DN-1768
50	82055.MS018. 5-2200767	1	2P26LSU5039Y1-10	DN-2542
51	82055.MS018. 5-2200763	0	2P26LSU5039Y1-6	DN-2543

邱雲長

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Packing List No. : LM-MS018-057

S/N	Drawing No	Rev	Spool No	Doosan No
52	82055.MS018. 5-2200764	0	2P26LSU5039Y1-7	DN-2544
53	82055.MS018. 5-2200618	0	2P26LSU5039Y3-1	DN-2547
54	82055.MS018. 5-2200619	0	2P26LSU5039Y3-2	DN-2548
55	82055.MS018. 5-2200620	0	2P26LSU5039Y3-3	DN-2549
56	82055.MS018. 5-2200630	0	2P26LSU5039Y5-4	DN-2383
57	82055.MS018. 5-2200637	0	2P26LSU5039Y7-1	DN-2550
58	82055.MS018. 5-2200640	0	2P26LSU5039Y7-4	DN-2551
59	82055.MS018. 5-2200961	1	2P26LSU5233Y1-1	DN-1777
60	82055.MS018. 5-2200963	1	2P26LSU5235Y1-1	DN-1779
61	82055.MS018. 5-2200964	1	2P26LSU5236Y1-1	DN-1780
62	82055.MS018. 5-2200965	1	2P26LSU5237Y1-1	DN-1781
63	82055.MS018. 5-2200966	1	2P26LSU5238Y1-1	DN-1782
64	82055.MS018. 5-2200976	1	2P26LSU5248Y1-1	DN-1792
65	82055.MS018. 5-2200977	1	2P26LSU5249Y1-1	DN-1793
66	82055.MS018. 5-2200978	1	2P26LSU5250Y1-1	DN-1794
67	82055.MS018. 5-2200715	1	2P26LSV5040Y1-4	DN-1605

邱雲長

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**LUNG MEN PROJECT
RELEASE FOR SHIPMENT**

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 57
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA
PRODUCT DESCRIPTION Shop Fabricated ASME III Piping(All Size)		
<u>SUPPLIER'S CERTIFICATION</u>		
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.		
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>
Fabricated Pipe Spools	14 pcs	2
<u>Packing List No.</u>	<u>Remark</u>	
LM-MS018-058	-	
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.		
SIGNED <i>M. K. Kim</i>	DATE <i>Mar. 6. '06</i>	
TITLE General Manager	SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.	
<u>TPC REPRESENTATIVE CERTIFICATION¹</u>		
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."		
SIGNED <i>F. C. Chion</i>	DATE <i>Apr. 6, 2006</i>	
TITLE <i>QA Representative</i>	RFA NO. <i>NA</i>	
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS		

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Section 4. List of Supplied Spools

Packing List No. : LM-MS018-058

S/N	Drawing No	Rev	Spool No	Doosan No
1	82055.MS018. 5-2200588	0	2P26LSP5031Y27-8	DN-2617
2	82055.MS018. 5-2200589	0	2P26LSP5031Y27-9	DN-2618
3	82055.MS018. 5-2200758	0	2P26LSU5039Y1-1	DN-2619
4	82055.MS018. 5-2200759	0	2P26LSU5039Y1-2	DN-2620
5	82055.MS018. 5-2200760	0	2P26LSU5039Y1-3	DN-2621
6	82055.MS018. 5-2200761	0	2P26LSU5039Y1-4	DN-2622
7	82055.MS018. 5-2200762	1	2P26LSU5039Y1-5	DN-2623
8	82055.MS018. 5-2200638	0	2P26LSU5039Y7-2	DN-2628
9	82055.MS018. 5-2200639	0	2P26LSU5039Y7-3	DN-2629
10	82055.MS018. 5-2200641	0	2P26LSU5039Y7-5	DN-2630
11	82055.MS018. 5-2200642	1	2P26LSU5039Y7-6	DN-2631
12	82055.MS018. 5-2200643	0	2P26LSU5039Y7-7	DN-2632
13	82055.MS018. 5-2200644	0	2P26LSU5039Y7-8	DN-2633
14	82055.MS018. 5-2200645	0	2P26LSU5039Y7-9	DN-2634

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4-6-06



**LUNG MEN PROJECT
RELEASE FOR SHIPMENT**

Product Quality Certificate

CLIENT: Taiwan Power Company		TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 58
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)		REV. 5	ADDENDA
PRODUCT DESCRIPTION Shop Fabricated ASME III Piping(All Size)			
<u>SUPPLIER'S CERTIFICATION</u>			
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.			
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>	<u>Packing List No.</u> <u>Remark</u>
Fabricated Pipe Spools	10 pcs	2	LM-MS018-059 -
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.			
SIGNED <i>M. K. Kim</i>	DATE <i>Apr. 6, 06</i>		
TITLE General Manager	SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.		
<u>TPC REPRESENTATIVE CERTIFICATION¹</u>			
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."			
SIGNED <i>Z. C. Chion</i>	DATE <i>Apr. 6, 2006</i>		
TITLE QA Representative	RFA NO. NA		
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS			

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Section 4. List of Supplied Spools

Packing List No. : LM-MS018-059

S/N	Drawing No	Rev	Spool No	Doosan No
1	82055.MS018. 5-2201054	0	2W12LSA5003Y5-1	DN-1804
2	82055.MS018. 5-2201057	1	2W12LSA5100Y1-1	DN-1849
3	82055.MS018. 5-2201059	1	2W12LSA5100Y1-3	DN-1851
4	82055.MS018. 5-2201070	0	2W12LSB5006Y5-1	DN-1862
5	82055.MS018. 5-2201073	1	2W12LSB5101Y1-1	DN-1865
6	82055.MS018. 5-2201075	1	2W12LSB5101Y1-3	DN-1867
7	82055.MS018. 5-2201079	0	2W12LSC5008Y1-3	DN-1871
8	82055.MS018. 5-2201086	0	2W12LSC5009Y5-1	DN-1878
9	82055.MS018. 5-2201089	1	2W12LSC5102Y1-1	DN-1881
10	82055.MS018. 5-2201091	1	2W12LSC5102Y1-3	DN-1883

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LUNGMEN PROJECT
RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 59										
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA										
PRODUCT Shop Fabricated ASME III Piping(All Size) DESCRIPTION												
SUPPLIER'S CERTIFICATION												
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.												
<table border="1"><thead><tr><th>Description</th><th>Q'ty</th><th>Unit</th><th>Packing List No.</th><th>Remark</th></tr></thead><tbody><tr><td>Loose Parts</td><td>Refer to Packing List</td><td>1</td><td>LM-MS018-060</td><td>-</td></tr></tbody></table>			Description	Q'ty	Unit	Packing List No.	Remark	Loose Parts	Refer to Packing List	1	LM-MS018-060	-
Description	Q'ty	Unit	Packing List No.	Remark								
Loose Parts	Refer to Packing List	1	LM-MS018-060	-								
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.												
SIGNED <i>M. K. K</i>	DATE <i>Apr. 7, 2006</i>											
TITLE General Manager	SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.											
TPC REPRESENTATIVE CERTIFICATION¹												
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."												
SIGNED <i>F. C. Chien</i>	DATE <i>Apr. 7, 2006</i>											
TITLE <i>QA Representative</i>	RFA NO. <i>NA</i>											
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS												

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Detail Packing List (B)

Packing List No. : LM-MS018-060

Mark & Numbers Packages	Package Type	Unit	System No	Contract No	Description of Goods	Material	Size(mm) (OD x Thk' x L)	Q'ty (Pcs/Set/mm)	Remark
#001	BOX	1	B21	A.a.B21.2.3	90D ELBOW	SA105	20 9000# SW	10	
			B21	A.a.B21.2.3	90D ELBOW	SA105	20 9000# SW	3	
			B21	A.a.B21.2.4	90D ELBOW	SA105	25 9000# SW	1	
			B21	A.a.B21.5.1	BLIND FLANGE	SA105	20 1500# BLRF	10	
			B21	A.a.B21.5.1	BLIND FLANGE	SA105	20 1500# BLRF	3	
			B21	A.a.B21.5.3	FLANGE	SA105	20 1500# SWRF XXS	3	
			B21	A.a.B21.13.1	SPECIAL	SA182-F304L	25 3000#	8	
			B21	A.a.P26.5.9	ORIFICE FLANGE	SB564(N08367)	50 300#(15mm) WNRF S80S	12	
#002	BOX	1	P26	A.a.P26.2.4	90D LR ELBOW	SB366-WP6XNW	50 S80S BW	3	
			P26	A.a.P26.5.8	BLIND FLANGE	SB564(N08367)	50 150# BLRF	3	
			P26	A.a.W12.5.4	FLANGE	SB564(N08367)	50 150# SORF	3	
#003	BOX	1	W12	A.a.W12.5.7	ORIFICE FLANGE	SB564(N08367)	80 300#(15mm) WNRF STD	6	
			W12	A.a.W12.11.1	SPRAY NOZZLE	SB691(N08367)	15 MTE(80D)	90	
			W12	A.a.W12.11.1	SPRAY NOZZLE	SB691(N08367)	15 MTE(65D)	72	
			W12	A.a.W12.11.1	SPRAY NOZZLE	SB691(N08367)	15 MTE(65D)	72	

Total Q'ty : 227



LUNGMEN PROJECT
RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 60		
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA		
PRODUCT Shop Fabricated ASME III Piping(All Size) DESCRIPTION				
SUPPLIER'S CERTIFICATION				
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.				
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>	<u>Packing List No.</u>	<u>Remark</u>
Loose Parts	Refer to Packing List	2	LM-MS018-061	-
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.				
SIGNED	<i>M. K. Kim</i>	DATE	<i>Apr. 7, 2006</i>	
TITLE	General Manager	SUPPLIER	Doosan Heavy Industries & Construction Co., Ltd.	
TPC REPRESENTATIVE CERTIFICATION¹				
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."				
SIGNED	<i>Z. C. Chinn</i>	DATE	<i>Apr. 7, 2006</i>	
TITLE	QA Representative	RFA NO.	NA	
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS				

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Detail Packing List (B)

Packing List No. : LM-MS018-061

Mark & Numbers Packages	Package Type	Unit	System No	Contract No	Description of Goods	Material	Size(mm) (OD x Thk' x L)	Q'ty (Pcs/Set/mm)	Remark
#001	BOX	2	B21	A.a.B21.2.3	90D ELBOW	SA105	20 9000# SW	13	
			B21	A.a.B21.2.4	90D ELBOW	SA105	25 9000# SW	1	
			B21	A.a.B21.5.1	BLIND FLANGE	SA105	20 1500# BLRF	13	
			B21	A.a.B21.5.3	FLANGE	SA105	20 1500# SWRF XXS	13	
			B21	A.a.B21.11.3	GASKET	SPIRAL WOUND METAL	20 1500#(3T) 304SS WIND CS CENT	13	
			B21	A.a.B21.13.1	SPECIAL	SA182-F304L	25 3000#	8	
			B26	Non-BOQ1	FLANGE	SB564(N08367)	15 150# SORF	24	
			B26	Non-BOQ1	FLANGE	SB564(N08367)	15 150# SORF	12	
			B26	A.a.P26.7.2a	NIPPLE	SB675(N08367)	20 SCH 80S-80L BE/PE	6	
			B26	A.a.P26.7.2	NIPPLE	SB675(N08367)	20 SCH 80S-80L BE	11	
#002	BOX	2	B26	A.a.P26.7.2	NIPPLE	SB675(N08367)	20 SCH 80S-80L BE	7	
			B26	A.a.P26.7.2	NIPPLE	SB675(N08367)	20 SCH 80S-80L BE	12	
			B26	A.a.P26.8.2a	GASKET	NON ASBESTOS FIBER	50 300# 3T FLAT RING	12	
			B26	Non-BOQ2	GASKET	NON ASBESTOS FIBER	15 150# 3T FLAT RING	36	
			B26	A.a.P26.9.7a	STUD	SA193-B6/SA194-6	15 x 178L	24	
			B26	A.a.W12.5.7	ORIFICE FLANGE	SB564(N08367)	80 300#(15mm) WNRF STD	6	
			B26	A.a.W12.11.1	SPRAY NOZZLE	SB691(N08367)	15 MTE(80D)	90	
			B26	A.a.W12.11.1	SPRAY NOZZLE	SB691(N08367)	15 MTE(65D)	72	
			B26	A.a.W12.8.8	GASKET	NON ASBESTOS FIBER	50 300# 3T FLAT RING	12	
			B26	A.a.W12.9.7	STUD	SA193-B6/SA194-6	12 x 64L	144	
#003	BOX	2	B26	A.a.W12.9.3	STUD	SA193-B6/SA194-6	15 x 147L	96	
			B26	A.a.W12.9.4	STUD	SA193-B6/SA194-6	15 x 178L	16	
			B26	A.a.W12.9.4	STUD	SA193-B6/SA194-6	15 x 178L	8	
			B26	A.a.W12.9.4	STUD	SA193-B6/SA194-6	15 x 178L	8	

Total Q'ty : 637



LUNG MEN PROJECT
RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 61		
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA		
PRODUCT Shop Fabricated ASME III Piping(All Size)				
DESCRIPTION				
SUPPLIER'S CERTIFICATION				
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.				
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>	<u>Packing List No.</u>	<u>Remark</u>
Loose Parts	Refer to Packing List	1	LM-MS018-062	Non-BOQ
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.				
SIGNED	<i>M. K. Kim</i>	DATE	<i>Apr. 7, 2006</i>	
TITLE	General Manager	SUPPLIER	Doosan Heavy Industries & Construction Co., Ltd.	
TPC REPRESENTATIVE CERTIFICATION'				
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."				
SIGNED	<i>Z. C. Chiu</i>	DATE	<i>Apr. 7, 2006</i>	
TITLE	QA Representative	RFA NO.	NA	
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS				

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

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Detail Packing List (B)

Packing List No. : L-M-MS018-062

Mark & Numbers Packages	Package Type	Unit	System No	Contract No	Description of Goods	Material	Size(mm)	Q'ty	Remark
#001	BOX	1	B21	A.a.B21.12.2a	STUD	SA193-B7(SA194-2H)	(OD x Thk' x L) 19 x 110L	32	
			B21	A.a.B21.4.5a	RED INSERT	SA105	25X 20 9000# SW TYP.1	8	
			P13	A.b.P13.1.37	SHEAR LUG	SA240-TP316L	75T X 100W X 260L	4	
#002	BOX	1	P26	A.a.P26.4.2c	RED CPLG	SB462-WP6XNS	15X10 3000# SW	18	
			P26	Non-BOQ9	NIPPLE	SB675(N08367)	15 SCH 80S-80L PE	18	
			P26	A.a.P26.7.1	NIPPLE	SB675(N08367)	15 SCH 80S-80L BE/PE	6	
			P26	A.b.P26.1.48	LUG	SB688	9.53T X 25W X 50L	12	
			P26	A.b.P26.1.43	COLLAR RING	SB688	9.53T X OD160 X ID64	12	
			P26	A.b.P26.1.42	COLLAR RING	SB688	9.53T X OD240 X ID94	3	
#003	BOX	1	P26	A.b.P26.1.41	COLLAR RING	SB688	9.53T X OD270 X ID120	6	
			P26	A.b.P26.1.47	SHEAR LUG	SB688	65T X 80W X 270L	44	
			P26	A.b.P26.1.46	SHEAR LUG	SB688	65T X 80W X 320L	29	
			P26	A.b.P26.1.45	SHEAR LUG	SB688	65T X 105W X 370L	143	
			T22	A.a.T22.7.1	CON RED	SA403-WP304L	250X100 S80S BW	1	
			W12	A.a.W12.2.3a	90D LR ELBOW	SB366-WP6XNW	15 S80S BW	48	
#004	BOX	1	W12	A.a.W12.4.5b	CON RED	SB366-WP6XNW	20X 10 S80S BW	12	
			W12	A.a.W12.5.5a	FLANGE	SB564(N08367)	15.150# SORF	24	
			W12	A.a.W12.5.7a	ORIFICE FLANGE	SB564(N08367)	50 300#(15mm) WNRF S80S	12	
			W12	A.a.W12.12.1	PLUG(HEX HEAD)	SB366-WP6XNS	15 3000# MTE	6	
			W12	Non-BOQ10	NIPPLE	SB675(N08367)	15 SCH 80S-80L BE/PE	6	
			W12	Non-BOQ11	NIPPLE	SB675(N08367)	15 SCH 80S-150L BE/PE	6	
			W12	A.a.W12.8.6	GASKET	NON ASBESTOS FIBER	15.150# 3T FLAT RING	18	
			W12	A.a.W12.8.7	GASKET	NON ASBESTOS FIBER	50 150# 3T FLAT RING	12	
			W12	A.a.W12.9.1	STUD	SA193-B6(SA194-6)	15 x 83L	48	
			W12	A.b.W12.1.53	LUG	SB688	9.53T X 40W X 40L	12	
			W12	A.b.W12.1.52	COLLAR PLATE	SB688	9.53T X 180W X 280L	12	
			W12	A.b.W12.1.51	COLLAR RING	SB688	9.53T X OD150 X ID52	6	

Total Q'ty : 558



LUNG MEN PROJECT
RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT: Taiwan Power Company	TPC CONTRACT NO. 8749311M01800	SHIPMENT NO. 62		
TPC SPECIFICATION NO. 874-MS-018(874-M-0029)	REV. 5	ADDENDA		
PRODUCT Shop Fabricated ASME III Piping(All Size)				
DESCRIPTION				
SUPPLIER'S CERTIFICATION				
I HEREBY CERTIFY THAT THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED PROGRAM AND ARE IN COMPLIANCE WITH THE APPLICABLE CODES, STANDARDS AND SPECIFICATIONS LISTED IN TPC PURCHASE SPECIFICATION REQUIREMENT.				
<u>Description</u>	<u>Q'ty</u>	<u>Unit</u>	<u>Packing List No.</u>	<u>Remark</u>
Loose Parts	Refer to Packing List	2	LM-MS018-063	Non-BOQ
ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC AUTHORIZED REPRESENTATIVE.				
SIGNED <i>M. K. Kim</i>	DATE <i>Apr. 7, 2006</i>			
TITLE General Manager	SUPPLIER Doosan Heavy Industries & Construction Co., Ltd.			
TPC REPRESENTATIVE CERTIFICATION¹				
THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIERS' CERTIFICATION STATEMENT HAS BEEN REVIEWED AND THAT NO DEVIATIONS FROM QUALITY ASSURANCE REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW."				
SIGNED <i>F. C. Chiu</i>	DATE <i>Apr. 7, 2006</i>			
TITLE <i>QA Representative</i>	RFA NO. <i>NA</i>			
DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS				

1 - The TPC representative's certification does not release the supplier from their responsibility to provide work products that are acceptable under the contract nor does it preclude TPC's right to reject nonconforming work.

Detail Packing List (B)

Packing List No. : LM-MS018-063

Mark & Numbers Packages	Package Type	Unit	System No	Contract No	Description of Goods	Material	Size(mm) (OD x Thk' x L)	Q'ty (Pcs/Set/mm)	Remark
#001	BOX	2	B21	A.a.B21.12.2a	STUD	SA193-B7/SA194-2H	19 x 110L	32	
			B21	A.a.B21.4.5a	RED INSERT	SA105	25X 20 9000# SW TYP.1	8	
#002	BOX	2	P13	A.b.P13.1.37	SHEAR LUG	SA240-TP316L	75T X 100W X 260L	4	
#003	BOX	2	P26	A.a.P26.4.2c	RED CPLG	SB462-WP6XNS	15X10 3000# SW	18	
			P26	A.a.P26.7.1	NIPPLE	SB675(N08367)	15 SCH 80S-80L BE/PE	6	
			P26	A.b.P26.1.48	LUG	SB688	9.53T X 25W X 50L	12	
			P26	A.b.P26.1.43	COLLAR RING	SB688	9.53T X OD160 X ID64	12	
			P26	A.b.P26.1.42	COLLAR RING	SB688	9.53T X OD240 X ID94	3	
			P26	A.b.P26.1.41	COLLAR RING	SB688	9.53T X OD270 X ID120	6	
			P26	A.b.P26.1.45	SHEAR LUG	SB688	65T X 105W X 370L	75	
#004	BOX	2	T22	A.a.T22.7.1	CON RED	SA403-WP304L	250X100 S80S BW	1	
#005	BOX	2	W12	A.a.W12.5.5a	FLANGE	SB564(N08367)	15 150# SORF	24	
			W12	A.a.W12.12.1	PLUG(HEX HEAD)	SB366-WP6XNS	15 3000# MTE	6	
			W12	Non-BOQ10	NIPPLE	SB675(N08367)	15 SCH 80S-80L BE/PE	6	
			W12	Non-BOQ11	NIPPLE	SB675(N08367)	15 SCH 80S-150L BE/PE	6	
			W12	A.a.W12.8.6	GASKET	NON ASBESTOS FIBER	15 150# 3T FLAT RING	18	
			W12	A.a.W12.8.7	GASKET	NON ASBESTOS FIBER	50 150# 3T FLAT RING	12	
			W12	A.a.W12.9.1	STUD	SA193-B6/SA194-6	15 x 83L	20	
			W12	A.a.W12.9.1	STUD	SA193-B6/SA194-6	15 x 83L	28	
			W12	A.b.W12.1.53	LUG	SB688	9.53T X 40W X 40L	12	
			W12	A.b.W12.1.52	COLLAR PLATE	SB688	9.53T X 180W X 280L	12	
			W12	A.b.W12.1.51	COLLAR RING	SB688	9.53T X OD150 X ID52	6	

Total Qty : 327