出國報告（出國類別：其他）

龍門計劃國外製造機械、儀電設備製程中品質查驗

服務機關：台灣電力公司核能安全處
姓名職稱：羅士貴　核能工程監
派赴國家：加拿大、德國
出國期間：97 年 5 月 26 日 ~ 97 年 6 月 6 日
報告日期：97 年 7 月 23 日

出國報告審核表

出國報告名稱：龍門計劃國外製造機械、儀電設備製程中品質查驗		
出國人姓名(2人以上，以1人爲代表)	職稱	服務單位
羅 士 貴	核能工程監	核能安全處
出國期間： 97 年 5 月 26 日至 97 年 6 月 6 日		報告繳交日期：97年 7 月 17 日

出國計畫主辦機關審核意見	☑1.依限繳交出國報告 ☑2.格式完整（本文必須具備「目地」、「過程」、「心得」、「建議事項」） ☑3.內容充實完備. □4.建議具參考價值 □5.送本機關參考或研辦 □6.送上級機關參考 □7.退回補正，原因：□（1）不符原核定出國計畫 □（2）以外文撰寫或僅以所蒐集外文資料爲內容以 □（3）內容空洞簡略 □（4）電子檔案未依格式辦理 □（5）未於資訊網登錄提要資料及傳送出國報告電子檔 □8.本報告除上傳至出國報告資訊網外，將採行之公開發表： □辦理本機關出國報告座談會（說明會），與同人進行知識分享。 □於本機關業務會報提出報告 □9.其他處理意見及方式：
層轉機關審核意見	□1.同意主辦機關審核意見□全部 □部分_____（填寫審核意見編號） □2.退回補正，原因：_____ □3.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 羅士貴 97.7.23　單位主管：　主管處主管 葉英川 97.7.24　總經理副總經理：張茂雄 97.7.24

徐懷嬰 7/25

行政院及所屬各機關出國報告提要

出國報告名稱：龍門計劃國外製造機械、儀電設備製程中品質查驗

頁數 47 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: 羅士貴/台灣電力公司/核能安全處/核能工程監/02-23667199

出國類別：□1 考察□2 進修□3 研究□4 實習☑5 其他

出國期間：97/5/26~97/6/6　　出國地區：加拿大、德國

報告日期：97/7/23

分類號/目

關鍵詞：龍門計畫、品質查驗

內容摘要：依據龍門計畫採購合約規定，派員赴 BOP 附屬機械設備製造廠家執行製程中品質查驗，本次任務為分別赴（一）MS019A1「Carbon/Alloy Steel, Valves (ASME III) Gate & Globe」採購案之製造廠家 VELAN Inc.，執行 Valve 設備 Shipping Release 之品質查驗，包括 Final/Packing Inspection、QRP(Quality Record Package)審查及簽署 PQC (Product Quality Certificate)；(二) MS040「Reactor Building Cranes and Auxiliary Fuel Building Crane」採購案之廠家 NKM Noell GmbH.，執行 Unit 2 Reactor Building Crane & Hatch Hoists Hatch 設備倉儲廠家後交運時 Shipping Release 之品質查驗，包括 Final/Packing Inspection、文件審查及簽署 PQC (Product Quality Certificate)。

品質查驗結果均能符合採購規範之要求及廠家作業程序書之規定，並依採購合約規定簽署採購設備之 PQC，作為廠家設備可交運之依據。

出國報告（出國類別：其他）

龍門計劃國外製造機械、儀電設備製程中品質查驗

服務機關：台灣電力公司核能安全處
姓名職稱：羅士貴　核能工程監
派赴國家：加拿大、德國
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龍門計劃國外製造機械、儀電設備製程中品質查驗

摘　　要

依據龍門計畫採購合約規定，派員赴 BOP 附屬機械設備製造廠家執行製程中品質查驗，本次任務爲分別赴（一）MS019A1「Carbon/Alloy Steel, Valves (ASME III) Gate & Globe」採購案之製造廠家 VELAN Inc.，執行 Valve 設備 Shipping Release 之品質查驗，包括 Final/Packing Inspection、QRP(Quality Record Package)審查及簽署 PQC (Product Quality Certificate)；（二）MS040「Reactor Building Cranes and Auxiliary Fuel Building Crane」採購案之廠家 NKM Noell GmbH.，執行 Unit 2 Reactor Building Crane & Hatch Hoists Hatch 設備倉儲廠家後交運時 Shipping Release 之品質查驗，包括 Final / Packing Inspection、文件審查及簽署 PQC (Product Quality Certificate)。

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龍門計劃國外製造機械、儀電設備製程中品質查驗

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壹、出國任務說明

本項出國計畫爲依據龍門計畫採購合約規定，派員赴 BOP 附屬機械設備製造廠家執行製程中品質查驗，本次任務爲分別赴（一）MS019A1「Carbon/Alloy Steel, Valves (ASME III) Gate & Globe」採購案之製造廠家 VELAN Inc.，執行 Valve 設備 Shipping Release 之品質查驗，包括 Final / Packing Inspection、QRP(Quality Record Package)審查及簽署 PQC(Product Quality Certificate)；（二）MS040「Reactor Building Cranes and Auxiliary Fuel Building Crane」採購案之廠家 NKM Noell GmbH.，執行 Unit 2 Reactor Building Crane & Hatch Hoists Hatch 設備倉儲廠家後交運時 Shipping Release 之品質查驗，包括 Final / Packing Inspection、文件審查及簽署 PQC (Product Quality Certificate)。

貳、出國行程

97.5.26~97.5.27	台北-紐約-蒙特婁	往　　程
97.5.28~97.5.30	加拿大 VELAN 公司	執行品質查驗
97.5.31~97.6.1	蒙特婁-法蘭克福-Veitshochheim	行　　程
97.6.2~97.6.3	德國 NKM Noell GmbH.	執行品質查驗
97.6.4~97.6.6	Veitshochheim-法蘭克福-台北	返　　程

參、品質查驗工作報告

一、MS019A1「Carbon/Alloy Steel, Valves (ASME III) Gate, Globe, Check, Ball, Plug and Butterfly」採購案

1. MS019A1 採購案簡述

A. 龍門計畫 MS019A「Carbon/Alloy Steel, Valves (ASME III) Gate, Globe, Check, Ball, Plug and Butterfly」採購案，採購規範爲 Specification No. 874-M0033 Revision No.2 Amendment 9 (BOP Valves)，以及 GE Specification No. 31113.62.3898 Revision No.3 Amendment 5 (BONI Valves)，採購設備爲 ASME Sec.III 核能安

全等級之 Carbon and Alloy Steel Manually-Operated Valves，並分爲下列六種 Valve Type 分開招標:

Part A	Globe Valve	Part D	Ball Valve
Part B	Gate Valve	Part E	Plug Valve
Part C	Check Valve	Part F	Butterfly Valve

B. 決標結果：由加拿大 Velan 公司得標 Part A & Part B 部份之 Globe Valve 及 Gate Valve，採購合約訂爲 8749111M019A1；美國 Flowserve US Inc.（Raleigh 廠）得標 Part C, D, E & F 部份之 Check Valve、Ball Valve、Ball Valve、Plug Valve 及 Butterfly Valve，其採購合約則稱爲 8749111M019A2。

龍門計畫 MS019A 採購案爲 ASME Sec.III Valve，兩個合約 19A1 及 19A2 採購之 Valve 各約有 4000 多個閥，大部份爲 50mm(2")以下的 Smaller Valves（其中以 3/4"佔多數），少部份爲 80mm(3") Valve，採購之設備大部份用在 BONI(Balance of Nuclear Island)之系統 Root Valves，少部份用在 BOP(Balance of Plant)；本採購案因多次變更合約及 GE 時常在修訂 BOQ(Bill of Quantity)之閥數量，致整個履約時程迄今近四年多始完成。

C. MS019A1 採購案由 Velan 公司得標承製，總公司及工廠地點均位於加拿大蒙特婁市之郊區，Velan 公司是一家非常專業之閥類製造廠家，蒙特婁廠區即有四家工廠，其中"Plant 1"佔地 10,126 平方公尺專門生產 1/4"~4"（8~100mm）之 Gate、Globe、及 Check 等 Valves，爲 ASME "N" Stamp 及 ISO 9000 驗證合格工廠，本公司 MS019A1 採購案大部份爲 50mm（2"）以下之 Smaller Valves 即在此"Plant 1" 製造生產；另"Plant 2" 佔地 15,800 平方公尺專門生產 2"~60"（50~1500mm）之 Forged and Cast steel Valve，包括：Gate、Globe、Check、Ball 及 Butterfly

等閥，亦爲 ASME "N" Stamp 及 ISO 9000 驗證通過合格之閥製造工廠，本公司 MS019A1 採購案少部份 BOP 之 3"及 3"以上的閥即在此"Plant 2" 製造生產，"Plant 2"亦是 Velan 設計部門之辦公室。

2. 品質查驗依據文件

A. 本次品質查驗之設備爲 Unit 2-24 Valves 之 Bolted Bonnet Gate Valve，由 Velan "Plant 2"製造生產；廠家通知於 2008.5.28 ~ 2008.5.30 執行最後一批 Unit 2-24 valves 之"Final Notification for Documentation & Final Inspection Hold Points"，本批閥之 Size 爲 80mm(3")、Class 爲 150lb，Valve Tag No.分別爲：2P26-BV-5002、-5006、-5010、-5014、-5018、-5022、-5525 ~ -5536、-5831 ~ 5836 等 24 個閥。主要品質查驗爲執行之 Final / Packing Inspection、QRP (Quality Record Package)審查及簽署 PQC (Product Quality Certificate)。

B. 依據文件

a. Specification No. 874-M0033 Rev. No. 3, A9.

b. Manufacturing & Inspection Plans/Quality Plan (VEL-QCI-4212, Rev.2)

c. Quality Records List (VEL-QCI-4332, Rev.1)

d. Hydrostatic Testing of ASME III Gate and Globe Valves (VEL-NDT-925 Rev. 2)

e. Cleaning of Carbon Steel Valves (VEL-P-862)

f. Packaging Procedure (VEL-P-856)

3. 品質文件審查

A. 相關製程品質文件之送審查核，經查下列品質文件本公司/石威公司已完成"Review Status 1 or 4"審核（Status 1 爲 Work Can Proceed、Status 4 爲 For Information Only）：

a. QA Manual Rev.10 (SWT-VI-MS019A1-000061)
b. Inspection and Test Plan (SWT-VI-MS019A1-000100)
c. Quality Record List (SWT-VI-MS019A1-000049)
d. Hydro Test Procedure (SWT-VI-MS019A1-000065)
e. Welding Procedure (SWT-VI-MS019A1-000099)
f. Wall thickness Measurement Procedure (SWT-VI-MS019A1-000020)
g. NDE Procedure for LP & RT (SWT-VI-MS019A1-000028)
h. Cleaning Procedure for CS/SS (SWT-VI-MS019A1-000020)
i. Painting Procedure, Visual Inspection Procedure & Ferrite Measurement Procedure (SWT-VI-MS019A1-000020)
j. Packing Procedure (SWT-VI-MS019A1-000074)

B. 設計文件及測試報告送審查核，因本次查驗之 Unit 2-24 Valves 爲 BOP 設備由石威公司負責設計，經查其設計圖面及設計報告已經本公司/石威審核爲"Review Status 1"，其中 Valve Outline Drawing No. X012-273060-N01A Rev.1 廠家 Velan 於 2006.3.7 以 VI-SWT-MS019A1-0135 函提出送審，經公司/石威於 2006.3.29 發函 SWT-VI- MS019A1-000133 通知廠家審核爲"Review Status 1"（如附件一），其 Design Report（設計報告）爲 DR-2580 Rev.0，廠家於 2007.1.29 以 VI-SWT-MS019A1-0187 函送審，經本公司/石威於 2007.2.14 發函（SWT-VI-MS019A1-000179）廠家通知審核爲"Review Status 1"（如附件二）；另 Unit 2-24 Valves 之廠製 Hydrotest Reports 廠家於 2008.5.1 以函 VI-TPC-MS019A1-0059 送

審，經本公司核技處 2008.5.7 發函 DNE-VI-0805-1508-P40 通知廠家審核爲“Review Status 1”（如附件三）。

4. Final/Packing Inspection

A. Unit 2-24 valves 製造廠家 Velan 依閥之類別及性質規定將本批閥之 Order Number 訂爲 X012-273060-N 予以控管，其設計製造圖面編爲 X012-273060-N01A（如附件四），生產時分兩次排程製造，一次爲 6 個閥（Valve S/N 爲 082011-1 ~ 6），另一次排程爲 18 個閥（Valve S/N 爲 082019-1 ~ 18）。因本採購案爲屬 ASME Sec. III 之 Code Stamped Valves，故均有兩個 Tag，一個爲 Nuclear Name Plate 之 Code Tagging，另一爲廠家 Velan 之 ID Tagging；在執行 Final Inspection 時，經查驗設備表面均很清潔，Valve Openings 部份均用盲板封閉，並用膠帶密封以保護閥之法蘭面。

B. 經抽查檢視 Valve Series Number 082019-3 及 082019-8 之閥尺寸符合 Valve Outline Drawing No. X012-273060-N01A，並檢視 Unit 2-24 valves 之 Final/Packing Inspection，均能符合廠家 Cleaning Procedure & Packing Procedure，以及技術規範之要求，其 Code Tagging 及 ID Tagging 均標示明確且符合法規及合約之要求。

C. 查驗完之 Unit 2-24 個 3” Valve 之 Final Inspection 後，其閥包裝方式是以兩個閥之 Handwheel 面互相倒扣緊靠，閥與閥間以木板隔開固定後放入木箱，其中 18 個閥內置乾燥劑後，用透明厚塑膠布包覆抽真空後熱黏合，放入標準貨櫃使用之較大木板條箱（尺寸爲 186x110x84 cm），另一箱 6 個閥則同樣包裝後放入較小之標準木板條箱（尺寸爲 115x110x64 cm），木箱上蓋蓋妥後封釘後在接合處再灌入矽膠密封；最後木板箱外面依合約要

求噴上 Shipping Mark 及貼妥以塑膠袋包封之 Packing List(如附件五）後，以標準貨櫃船交運到龍門工地。

5. QRP（Quality Records Package）審查

A. 本次品牌查驗 Unit 2-24 valves 之 QRP 僅一冊計 391 頁，其提出之 Quality Record Package Index 與 Velan 送審核准 QRL(Quality Record List)相符；經審查 Unit 2-24 valves 之品質文件紀錄瞭解廠家 Velan 係依據其 Data Package Number 作爲設備製程之識別與追溯，因本批閥製造時分爲二個排程製造，故其 Data Package Number 製造識別碼，一爲 082011（6 個 valves）另一爲 082019（18 個 valves)，以作爲相關閥品質文件與紀錄之識別、追溯及蒐集。故 Velan Valve 之 S/N(Serial Number)亦即爲其 Data Package Number 之序號，再對照採購合約之 Valve Tag Number，即可作爲該閥製程之識別追溯。

B. 審查 QRP 時即依前述識別方式查核其文件與紀錄，因此 24 個閥分二批製造，Data Package Number 一爲 082011（計 6 個閥）之 Valve S/N 爲 082011-1 ~ 082011-6，分別對應知 Valve Tag Number 爲 2P26-BV-5831 ~ 2P26-BV-5836；另一 Data Package Number 爲 082019（計 18 個閥）之 Valve S/N 爲 082019-1 ~ 082011-18，分別對應之 Valve Tag Number 爲 2P26-BV-5002、2P26-BV-5006、2P26-BV-5010、2P26-BV-5014、2P26-BV-5018、2P26-BV-5022、2P26-BV-5525 ~ -5536。

C. QRP 審查過程簡述：首先依其 Certificate of Compliance 的 QC Check List-Documentation /NDE 欄位之 Check item（例：Body、Bonnet、Wedge、Stem、Seat、Stud、Nut 等），是否需執行之記

載或動作如：S/N(Serial Number)、H/C(Heat Code)、Material Spec.、CMTR、PT、MT、UT、RT 等要求（詳附件六）及其相關圖面（X012-273060-N01A），再逐項核對其 ASME Code Data Report、ASME Code Design Report、As Built Outline and Assembly Drawings、Material Test Report、CMTR Hardface Materials、CMTR Weld Filler Materials、Heat Treat Records、NDE Records、Hydrostatic and Leak Test Report、Visual, Dimension and Wall Thickness Record、Operating and Maintenance Manual、以及相關閥製造時所需檢定之 Weld Procedures (WPS/PQR) & Hardface Procedures (WPS/ BPS/ PQR)、Inspection Personnel & Welder Qualifications 等紀錄/文件。

審查結果未發現缺失，ASME Code Data Report (Form NPV-1)亦經 ANI(Authorized Nuclear Inspector)簽證合格（詳附件七），其 QRP 蒐集建檔格式亦能符合審定之 QRL 要求。

6. PQC(Product Quality Certificate)簽署

依據採購規範及 Quality Plan 之要求，Unit 2-24 valves 必需經由 TPC 或 TPC 代表簽字後才能交運，故本次任務即爲執行採購設備 Final/ Packing Inspection、QRP 審查，結果若合格即簽署廠家 Velan Issued 之 PQC (Product Quality Certificate)，作爲設備可交運之依據；故在 Final/Packing Inspection 及 QRP 審查無意見後，在 QRP 之 Quality Record Package Index 及其 PQC 簽名（詳附件八）。

7. MS019A1 採購案總計採購 4874 個閥 ASME III Valves，其中 4826 個閥分別於 2006.9.25 至 2007.8.27 交運到龍門工地，剩餘之 48 個 3" Gate Valve（Unit 1 & 2 各 24 個）卻遲未交運，係因爲這些閥廠家 Velan 於 2004 年製造時，發現 3" Gate Valve 之 CN3MN 材料，廠家

疏失未遵照採購規範 M0033 規定材料規範爲 SA 351 之 CN3MN 材料，需執行 ASTM G48 method C 進行 Critical Pitting Test，故廠家 Velan 於 2006.8.8 開出 NCR 30283（詳附件九），經其評估後之處置（Disposition）方式爲“Accept as is”，因 NCR 之處置方式若爲“Accept as is”時，廠家依合約規定需函本公司審核同意，惟本 NCR 經本公司/石威審查後不同意；廠家再函稱當初係遺漏執行該 Test，現階段已無相同樣品可供 Test，並另提 ASTM A262 Standard 測試報告來替代，要求本公司審核同意 NCR “Accept as is” 之處置， 但經本公司/石威評估審查後仍不同意廠家之“Accept as is”處置。

8. 因前述 NCR 案經廠家與本公司近一年來多次澄清說明仍未獲得本公司同意“Accept as is”，故廠家最後於 2007 年 7 月重新購買 CN3MN 材料重新做 Test 製造剩餘之 48 個 3” Gate Valve（Unit 1 & 2 各 24 個）；惟一直到 2008 年 5 月才通知製造完成要求查驗交運，經洽詢原因爲 Velan “Plant 2” 之生產線排程頗忙碌，無法適時安排進製程，另本批 CN3MN 材料之測試需送材料專業實驗室進行物理性質強度及化學金相分析試驗，致花費不少時程。

   經查核本批 CN3MN 材料送實驗室執行 Critical Pitting Test 之 Test Certificate 及 Micrography Examination 之 Report，結果均符合採購規範之要求；另原發生 NCR 已完成之管閥，經查棄放於廠房一隅，廠家擬以成品轉售給對品質要求較低之採購者。

9. 品質查驗廠家接洽人員

   Mr. Ralph A. Sargent (Vice President, International Marketing)

   Mr. Yvon Castonguay (General Manager, Plant 2)

   Mr. Zoltan Palko (Quality Assurance Manager, Plant 2)

   Mr. John E. DeWit (QC Documentation Supervisor, Plant 2)

Mr. Shreenivas R. lyer (QC Documentation Administrator, Plant 2)

Mr. Luigi Nitti (Project Engineer)

Miss Barbara Alleyne (Sales Order Administrator)

10. 有關 MS019A1「Carbon/Alloy Steel, Valves (ASME III) Gate & Globe」採購案閥之交運品質查驗，執行 Final / Packing Inspection、QRP 審查及簽署 PQC 作業情況之照片如附件十。

二、MS040「Reactor Building Cranes and Auxiliary Fuel Building Crane」採購案

1. MS040 採購案簡述

A. 龍門計畫 MS040「Reactor Building Cranes and Auxiliary Fuel Building Crane」採購案，採購合約爲 8749011M04000，採購規範爲 Spec. No. 31113.61.1210 Rev.4 Amendment 2，Quality Class 爲 R-1。本採購爲統包採購案，其採購設備如下：

- 2 sets of Reactor Building Crane-150 tons (Tag No. 1/2F31-CRN-0001)
- 1 set of Auxiliary Fuel Building Crane-150 tons (Tag No. 0F31-CRN-0001)
- 2 sets of Hatch Hoist in Room 420-8 tons (Tag No. 1/2F31-HOI-0020)
- 2 sets of Hatch Hoist in Room 430-8 tons (Tag No. 1/2F31-HOI-0021)

得標廠家爲德國 NKM Noell Special Cranes GmbH，NKM Noell 爲非常專業之 Crane 製造廠家，亦是世界著名 REEL Group 之一員，本採購案主要設備爲 Trolley of RBC(Reactor Building Crane)、Trolley of AFBC(Auxiliary Fuel Building Crane) 及 Trolley of Reactor Building Hatch Hoist 等 Trolley，屬外購外製由 Noell 下包商(Sub-supplier)捷克之 KPS 公司製造及組裝。本採購案有關 Crane 及 Hatch Hoist 之 Main Girders (如：Steel

bridge、Crane Rails)等鋼構件及 Electrical Wiring，則由台灣中船公司承製屬外購內製；另工地現場之安裝及測試作業亦由中船公司承攬。

B. 本採購案由於龍門計畫先前緩建（Suspension），致 Reactor Building 及 Auxiliary Fuel Building 之廠房施工進度嚴重落後，無法如期供廠商安裝吊車；經本公司與廠家 NKM 溝通研商，廠家建議外製部份之設備於製造完成經業主執行品質查驗合格後，暫存放於德國以解決龍門工地長期儲存空間之不足，但需先支付廠家 80%設備款以利其資金周轉之要求；經龍門施工處與核火工處研討及評估後同意廠家之提議，並執行合約之修訂展延安裝日期、增列設備倉儲前 PQC 簽署規定、儲存期間廠家對設備檢查及維護之要求、修訂付款條件，以及交運前相關檢驗、PQC 簽署、品質文件紀錄提送及付款條件等協商規定（詳附件十一）。

C. 本採購案有關屬外購外製設備之交運情況如下：

Shipment No.	Ship date	Ship equipment
MS040-00001	Sept. 25, 2006	1F31-CRN-0001 - Trolley 0F31-CRN-0001 - Trolley
MS040-00002	Oct. 28, 2006	1F31-CRN-0001 - Trolley Attachments 0F31-CRN-0001 - Trolley Attachments 1F31-HOI-0020 - Trolley 1F31-HOI-0021 - Trolley
MS040-00003	Oct. 28, 2006	1F31-HOI-0020 - Electrical Equipment 1F31-HOI-0021 - Electrical Equipment 1F31-CRN-0001 - Spare Parts 2F31-CRN-0001 - Spare Parts 0F31-CRN-0001 - Spare Parts
MS040-00004	Dec. 04, 2007	2F31-CRN-0001 - Trolley Attachments 2F31-HOI-0020 - Trolley 2F31-HOI-0021 - Trolley
MS040-00005	July 12, 2008	2 F31-CRN-0001 - Trolley

2. 品質查驗依據文件

A. 廠家 Noell 依據核技處於 2007 年 10 月 16 日函廠家預計二號機 Reactor Building Crane 之 Trolley 必須於 2008 年 7 月底前交運龍門工地以備安裝之時程要求，於 2008 年 3 月 10 日函本公司洽詢是否仍如期交運，獲核火工處確認通知（詳附件十二），故本次赴廠家執行 MS040 採購案之設備品質查驗爲二號機 Reactor Building Crane 之 Trolley，於設備儲存後交運前之 Final/Package Inspection 及簽 PQC(Product Quality Certificate)，主要作業爲查驗製造廠家在設備儲存期間，是否確時依據 Special Storage Requirement 之規定，執行定期維護檢查並留存維護檢查紀錄，及目視檢查設備外觀表面是否受損發生銹蝕，以及設備交運包裝是否符合要求。

B. 依據文件

a. Specification No. 31113.61.1210 Rev.4, Amendment 1 Rev.3
b. Special Storage requirement (No.27015.MS040.06-020007 Rev.0)
c. Quality Plan-Europe fabrication (No.27015.MS040.04-020006 Rev.1)
d. Quality Record List EU-RBC (No.27015.MS040.04-021503 Rev.1)
e. Quality Record List EU-AFBC (No.27015.MS040.04-021602 Rev.0)
f. Quality Record List EU-Hatch Hoist (No.27015.MS040.04-021701 Rev.0)
g. N4F-04078009-PELP dated July 7, 2004

3. Final/Packing Inspection

A. 本採購案之二號機 RBC Trolley 於 2004 年 12 月 4 日，在其下

包商 KPS 公司製造完成，並簽妥倉儲前之 PQC 後，運往廠家 NKM 總公司（位於德國 Veitshochheim）附近之 LOXXESS WareCare GmbH 專業倉儲公司做長期儲存，廠家則應按 Special Storage Requirement 之規定，執行每 3 個月維護保養及 6 個月 Main Hoist Gearbox 內部防蝕之倉儲檢查，並記載留存相關檢查紀錄。

B. 經由 NKM 公司之 Mr. Karl Manger、Mr. Peter Wolf 會同赴 LOXXESS 倉儲公司之倉庫，執行二號機 RBC Trolley 之 Final/Packing Inspection，經掀開覆蓋 Trolley 之塑膠厚帆布後，檢查 Trolley 之捲揚鼓、Gearbox 及儀電設施等，僅發現 Trolley 鋼構橫樑有一處噴漆有約 0.2 公分寬 20 公分長之明顯刮傷痕跡，但未造成鋼構母材之損傷，因 Trolley 包裝交運在即，經與廠家研商後用寬的塑膠帶密貼於刮痕以阻絕空氣接觸，待 Trolley 運抵工地後馬上由其安裝承包商中船公司作塗裝處理，其餘未發現有損傷不符之情況；經檢視設備表面亦很乾淨整潔，組件表面黃色之噴漆看起來亦還頗鮮豔，另查視 Gearbox 亦無漏油現象，整體來說儲存之 Trolley 狀況尚稱良好，設備雖僅以塑膠厚帆布覆蓋儲存，但儲存至今已近三年多設備表面感覺色澤還很鮮艷，經瞭解可能是倉儲公司之空調設施完善及儲存地點（德國）之環境氣候頗佳所致。

C. 本次品質檢查爲 Trolley 倉儲後交運之查驗，執行完 Final Inspection 後隨即進行設備包裝，包裝由專業包裝公司之 KISTEM HAAS 赴倉儲現場承製，因 RBC Trolley 體積龐大（尺寸爲 L9133xW5800xH2430mm）重量達 62 公噸，寬度爲 5 公尺 80 公分無法裝進貨櫃運輸，故必須製作有鋼架底座之木板條

箱來包裝以承受 Trolley 吊卸時之重量。

D. 在倉庫內進行 RBC Trolley 包裝時，因安裝 Trolley 基座到鋼架底座時必須使用二部大型吊車舉起 Trolley，以便準確標記 Trolley 基座螺栓孔到鋼架底座之鑽孔位置，以及其後底座需鑽孔以安裝螺栓；其間曾發生吊車使用 RBC Trolley 所附吊運鋼索時，因受限倉庫屋頂空間而吊起時高度不足無法安裝鋼架底座，經吊車公司找來較短鋼索才解決。

E. RBC Trolley 之 Packing Inspection，經查驗木箱之鋼架底座與鋼架底座密合後之固定螺栓已鎖接妥，放入乾燥劑行後覆蓋二層塑膠布（底層爲厚透明塑膠布內層爲防撞顆粒塑膠布）抽出空氣後熱黏合包覆之塑膠布，再以厚木板條包裝成木箱，最後木箱噴上 Shipping Mark。查驗結果均能符合採購規範之要求及廠家作業程序書之規定。

F. RBC Trolley 經製作鋼架底座木板條包裝後，體積更龐大（尺寸爲 L9430xW6220xH2900mm）重量達 66.5 公噸，木箱寬度爲 6 公尺 22 公分，廠家原擬以水路載運，由倉儲附近之美茵河（Main River）再經萊茵河（Rhine River），運到北海之漢堡港（Hamburg）上船交運；惟因考慮到穩定及時效性，而改由路運到德國漢堡港裝船；路運係以大型貨車載運，因 Trolley 木箱包裝後寬度大於一般道路之寬度，故依德國交通規則此貨車僅可於夜間 10 時以後行駛，時速不可超過 60 公里。

4. QRP（Quality Records Package）審查

檢查完二號機 RBC Trolley 倉儲後交運之 Final/Packing Inspection 後，赴位於 Veitshochheim 之 NKM Noell 總部辦公室（原位於 Wurzburg），查核相關 QRP 及儲存期之維護保養紀錄。經審查二號機 RBC Trolley 倉儲儲存期之維護檢查紀錄，廠家均能按 Special Storage Requirement 之規定，執行每 3 月及 6 月之維護檢查，並留存維護紀錄（詳附件十三）。

5. PQC(Product Quality Certificate)簽署

經品質查驗二號機 RBC Trolley 之 Final / Package Inspection 均能符合採購規範之要求及廠家作業程序書之規定，以及審查相關 QRP 及儲存期之維護保養紀錄符合品質文件規定後，簽署 PQC（詳附件十四）作爲廠家設備可交運之依據。

6. 品質查驗廠家接洽人員

Mr. Karl Manger (Project Manager)

Mr. Peter Wolf (Quality Control Manager)

LOXXESS WareCare GmbH 倉儲管理員

KISTEM HAAS 包裝公司人員

Wurzburg NICKL Transport Gird 吊車公司人員

7. 有關 MS040 “Reactor Building Cranes and Auxiliary Fuel Building Crane”採購案之倉儲後交運執行 Final / Package Inspection 作業情況之照片如附件十五。

肆、出國期間所遭遇之困難與特殊事項

無。

伍、心得與建議

綜合本次廠家製程中品質查驗之經驗，心得如下：

1. MS019A1 採購案廠家 Velan 公司是 ASME "N" Stamp 及 ISO 9000 驗證合格非常專業之閥類製造廠家，其品質保證系統完善，無論是品質文件送審、品質紀錄之審核及重要製程之品質檢驗，均非常嚴謹，QA/QC 人員對設備品質文件與紀錄審查之規定均能充分瞭解，執行作業亦頗落實。本公司龍門計畫 MS034 廠家日本 Hitachi，以及核島區機械管路安裝工程之承包商中鼎公司，均向 Velan 公司列爲合格分包商（Subsupplier），並採購不少 Valve 使用於其採購案。
   經實際赴 Velan 廠瞭解感覺 Velan 之生產線非常忙碌，亦頗重視研發及設計其陣容龐大人員素質頗佳。然因龍門計畫 MS019A 採購案當初可能爲趕著招標時程，造成 GE 日後設計變更頻繁設備數量常修訂，以及石威公司設計審查回覆受致於 GE 公司，且早期 Velan 與本公司相關單位、石威及 GE 之溝通情況亦不是很好，故造成 MS019A1 採購案廠家設備生產狀況不順抱怨頻頻，履約時程超過四年。

2. MS040 採購案，廠家德國 NKM Noell Special Cranes GmbH 爲一非常專業之 Crane 製造廠家，其工作人員對 Crane 相關作業參與頗深並表現高度熱誠，對本公司採購設備及本公司赴廠檢驗均甚表重視與配合；有關本採購之設備因龍門計畫緩建，而廠家提議並獲同意之儲存於德國以減低長期儲存於工地之風險，對本公司減輕倉儲空間壓力及預防設備銹蝕損傷有很大之幫助，本統包採購案廠家德國 Noell 將國內設備之採購與製造及工地安裝與測試，轉包給中船公司承攬，相信

以經濟部中船公司之技術與品質應可使本 MS040 採購案之工程圓滿完成。

陸、附件

Stone & Webster Asia, Inc.

Ms. Barbara Alleyne
Sales Order Administrator
Velan Inc
7007 Cote de Liesse, Montreal, Quebec
Canada H4T 1G2
Fax: +1-514-748-8635
Email: balleyne@velanvalve.com
(Total pages: 1+)

March 29, 2006
JO 13016 /T2.20/MEC
SWT-VI-MS019A1-000133
Response Required: No

SUBJECT: LUNGMEN NUCLEAR POWER PROJECT UNITS 1 AND 2
CONTRACT NO. 8749111M019A1 CARBON AND ALLOY STEEL, VALVES (ASME III)
PART A – GLOBE, NEEDLE AND ANGLE VALVES & PART B – GATE VALVES
COMMENT ON UNIT 2 VALVE OUTLINE DRAWINGS (BOP)

REFERENCE: 1. VI-SWT-MS019A1-0135, dated March 7, 2006

Dear Ms. Alleyne,

In response to reference 1, S&W has reviewed the subject document and has no comment. The reviewed documents have the following status:

Project Document No.	Document Title	Review Status	Pages Returned w/ comments
12345.MS019.A15-22014 Rev. 1	Globe Valve, 20mm, 2500#, X011-273170-K01A	1 (Work Can Proceed)	1
12345.MS019.A15-22049 Rev. 1	Gate Valve, 80mm, 150#, X012-273060-N01A	1 (Work Can Proceed)	1

Please proceed in accordance with the contractual requirement.

If you have any questions regarding this letter, please contact Hanli Chen at 2696-3356 ext. 5410 or by E-mail at hanli.chen@stoneweb.com.tw.

Sincerely yours,

For Chang-ju

Thomas P. Tonden
Project Engineering Manager

TPT: chl0771

Enclosures: Mark-up Copy of Reviewed Document

cc: Mr. S. H. Liao - PM, DNE TPC

Stone & Webster Asia, Inc.

Ms. Barbara Alleyne
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(Total pages: 1+)

February 14, 2007
JO 13016 /T2.20/MEC
SWT-VI-MS019A1-000179
Response Required: No

SUBJECT: LUNGMEN NUCLEAR POWER PROJECT UNITS 1 AND 2
CONTRACT NO. 8749111M019A1 CARBON AND ALLOY STEEL, VALVES (ASME III)
PART A – GLOBE, NEEDLE AND ANGLE VALVES & PART B – GATE VALVES
ASME GLOBE AND GATE VALVES DESIGN
UNIT 2 VALVE DESIGN REPORTS

REFERENCE: 1. VI-SWT-MS019A1-0187, dated 1/29/2007
2. DNE-SWT-0702-5307-P40, dated 2/8/2007

Dear Ms. Alleyne,

TPC and S&W have reviewed your document submitted via Reference 1, and have no comment.

The document review status is as follows:

Document No.	Document Title	Review Status	Pages Returned with Comments
12345.MS019.A16-02570, Rev. 0	Design and Seismic Report (DR-2570)	1, Work can proceed	Cover
12345.MS019.A16-02580, Rev. 0	Design and Seismic Report (DR-2580)	1, Work can proceed	Cover

Please note that the Unit 2 document should be assigned a Project Document Number as: 12345.MS019.A1x-2xxxx. Please follow this instruction for your future issue of Unit 2 documents/drawings.

Please also be advised that for Unit 2 drawings/documents, Velan is allowed to issue directly the "Final for Use" version for TPC use (the Supplier's transmittal letter can be checked as "No Response Required") provided the following were met:

1. The corresponding Unit 1 document has a review status 1 or 4.
2. The Supplier's transmittal letter clearly states that document is a Unit 2 document that is a duplicate of a Unit 1 document that has been approved by S&W. A reference table to identify each Unit 2 document with a corresponding Unit 1 document and S&W approval letter should be included in the transmittal as below:

Unit 2 Document No.	Approved Unit 1 Document No.	S&W letter No. Approving Unit 1
12345-MS019.A1x-xxxxxx	12345-MS019.A1x-xxxxxx	SWT-VI-MS019A1-xxxxxx
12345	------	-------

If you have any questions regarding this letter, please contact Sean B. Tsai at 886-2-26966966 or by e-mail at sb.tsai@stoneweb.com.tw.

DEPARTMENT OF NUCLEAR ENGINEERING
TAIWAN POWER COMPANY
No. 62, Yanhai St., Gongliao Township,
Taipei County 228, Taiwan (R.O.C.)

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DNE-VI-0805-1506-P40
May 7, 2008

台電核能安全處
外 MAY 08 2008 文

Response Required? No ☑

(Total Pages: 1)

G核安 0080500022

Mr. Ralph A. Sargent
Vice President, Marketing
Velan Inc.
Fax: +1-514-748-8635

Subject: LUNGMEN NUCLEAR POWER PROJECT UNITS 1 & 2
Contract No. 8749111M019A1 Carbon and Alloy Steel Valves (ASME III)
Hydrotest Reports Approval and Acceptance, Specification 874-M0033 Unit 2-24 valves
12345.MS019.A14-00048 Rev. 0

Reference: VI-TPC-MS019A1-0059, dated May 1, 2008

Dear Mr. Sargent:

Please be advised that we have no comment on the Subject documents transmitted to us under Reference. The review status is "S1".

Your kind attention and prompt action will be appreciated.

If you have any questions regarding this letter, please contact Mr. S. H. Liu
TEL: 2490-2401 ext. 2021or by e-mail at u683514 @taipower.com.tw.

Very truly yours,

S. H. Liao

S. H. Liao
Project Manager

cc: C. C. Yao, Director, DNE
H. K. Lai, PM, DNFPP (2391-0281)
M. S. Chang, Director, DNS
Quince Chen, Vice President, Acella (Fax No. 02-2715-3521)

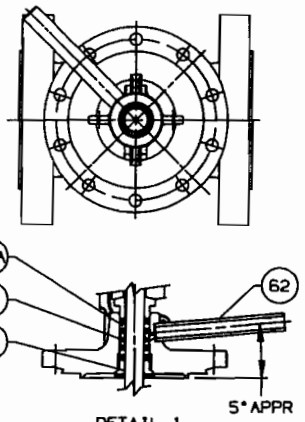
ITEM	SIZE	FIGURE NUMBER	NUCL CL	TAG NUMBERS	DESIGN CONDITIONS	QA CATEGORY	t m(MIN WALL)
B01-01	3"	F10-0064C-49RT	3	2P26-BV-5002, 5006, 5010, 5014, 2P26-BV-5018, 5022, 2P26-BV-5525 THRU 5536, 2P26-BV-5831 THRU 5836	1034 kPa @ 52°C	I	0.224" (5.69mm)

O.C. REQUIREMENTS						
CLASS 3	UT	PT	MT	CHEM & PHYS REPORT	CHARPY	CERT
BODY				✓		
BONNET				✓		
WEDGE				✓		
STEM				✓		
BOLTING						✓
WELDS		✓		✓		
H/FACING		✓		✓		
HYDRO						✓
SEAT				✓		

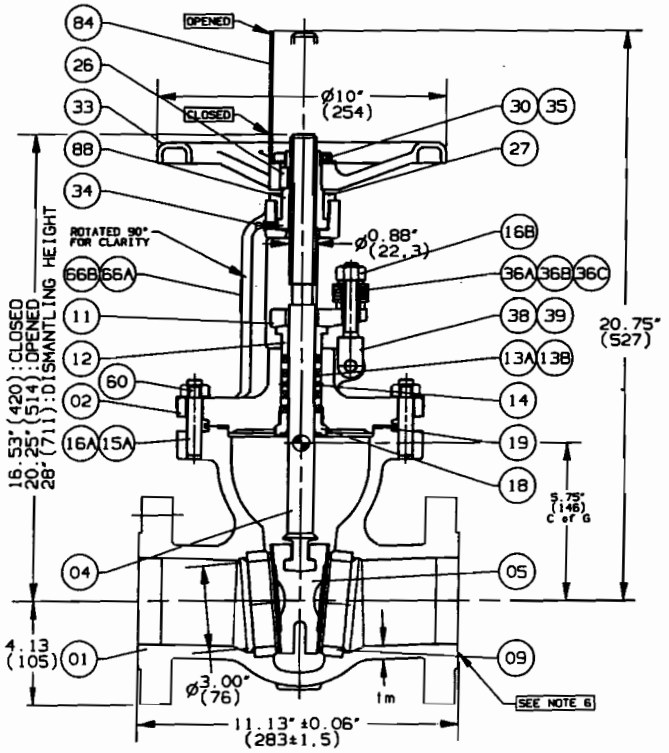
NOTE:
1. CODE CASES N539 AND N62-7 ARE APPLICABLE

TABLE 3: BOLTING DIMENSIONS			
ITEM	DESCRIPTION	TORQUE FT/LB	Nm
15A	1/2"-13UNC x 3"LG	---	---
16A	1/2"-13UNC-2B	35	47
16B	1/2"-13UNC-2B	14	19
38	1/2"-13UNC-2A	---	---

*TOLERANCE OF ±10% ON ALL TORQUE VALUES.



DETAIL 1
LEAK OFF PIPE ILLUSTRATION



MATERIAL LIST						
	PART	DESCRIPTION	QTY	MATERIAL	MAT'L SPEC	REMARKS
**	01	BODY	1	CN3MN	SA 351	
**	02	BONNET	1	CN3MN	SA 351	
*	04	STEM	1	630	SA 564	H1150
**	05	WEDGE	1	N08367(AL6XN)	SB 691	H/F:NOREM
*	09	SEAT	2	N08367(AL6XN)	ASTM B690 or B691	H/F:NOREM
*	11	PACKING FLANGE	1	F316	ASTM A182	ALT:CF3/A351
*	12	GLAND BUSHING	1	304/316	ASTM A479	
	13A	PKG RING (END)	4	BRAID GRAPH	GARLOCK 1399	OR EQUAL
	13B	PKG RING (INTER)	3	GRAPH RIBBON	J CRANE N241	OR EQUAL
	14	LANTERN RING	1	N08367(AL6XN)	ASTM B690 or B691	
**	15A	STUD	10	GR B8M, CL 1	SA 193	
**	16A	NUT	10	GR 8M	SA 194	
*	16B	NUT	2	GR 8M	ASTM A194	
*	18	BACKSEAT	1	630	ASTM A564	H1150
	19	GASKET	1	SS & GRAPH		SPIRAL WOUND
	26	KEY	1	GR 1020	ASTM A108	
*	27	YOKE BUSHING	1	304/316	ASTM A479	
	30	HANDWHEEL NUT	1	MALL IRON	ASTM A47	
	33	HANDWHEEL	1	MALL IRON	ASTM A47	
	34	GREASE FITTING	1	12.15 STL		GALVANIZED
	35	SET SCREW	1	ALLOY STEEL	ASTM A574	
	36A	BELLEVILLE WSHR	12	STEEL	AISI 6150	
	36B	GUIDE BUSHING	2	410	ASTM A479	COND 2
	36C	GUIDE SLEEVE	2	410	ASTM A479	COND 2
*	38	GLAND EYE BOLT	2	316	ASTM A479	
*	39	GROOVE PIN	2	304/316	ASTM A479	
	60	TAB WASHER	10	302/304	ASTM A167/240	
**	62	LEAK OFF PIPE	1	N08367(AL6XN)	SB 690 or SB 691	Ø1/2" SCH 80
	66A	NAME PLATE	1	302/304	ASTM A167/240	
	66B	NUCL NAME PLATE	1	302/304	ASTM A167/240	
	66C	TAG PLATE	1	302/304	ASTM A167/240	
	84	POS INDICATOR	1	CS	ASTM A36	
*	88	YOKE NUT	1	NI-RESIST	ASTM A439	TYPE D2C

**=PRESSURE BOUNDARY PARTS *=SAFETY RELATED PARTS

VELAN INC.
ENGINEERING DEPARTMENT
THIS DRAWING IS:
APPROVED ☑
APPROVED AS NOTED ☐
RELEASED FOR MANUFACT ☑
REL'D FOR FINAL INSP. ☑
CUSTOMER SEE TITLE BLOCK
ORDER NO.: SEE TITLE BLOCK
SIGN: [illegible] DATE: 14FEB06

NOTES:
1. VALVES DESIGNED IN ACCORDANCE WITH ASME SECT. III, 1989 EDITION AND CUSTOMER SPEC NO. "874-MS039, REV.2". WITH AMENDMENTS.
2. DIMENSIONS SHOWN IN PARENTHESIS ( ) ARE IN MM.
3. VALVE WEIGHT: DRY:115 LBS (52 Kg) WET:130 LBS (59 Kg)
4. COEFFICIENT OF FLOW: (Cv):625 (Kv:531)
5. CODE CASES N539 AND N62-7 ARE APPLICABLE.
6. VALVES PROVIDED WITH END FLANGES MACHINED TO MATCH ASME B16.5, 150 CLASS FLANGES WITH FACING FINISH OF 125-250 AARH (RA 3.2-6.3㎛).

66C — TAG NUMBER: / VALVE DESCRIPTION NO: VGF015-3-YS101-H
TAG PLATE

668 — CERTIFIED BY VELAN INC. / N / ANSI CLASS / NUCLEAR CLASS / SERIAL NO.
NUCLEAR NAME PLATE

66A — VELAN
STD NAME PLATE

REVIEW LEVEL: IV
TAIPOWER DRAWING REFERENCE NUMBER:
附件
PAGE 54 OF 39

REV	DATE	DESCRIPTION	CHK	APP
2	LII 13FEB 2006	PC 16A AND 16B WERE DESIGNATED AS "*": SAFETY RELATED & "**": PRESSURE BOUNDARY RESPECTIVELY; CODE CASES N539 AND N62-7 REMOVED FROM NUCLEAR NAMEPLATE.	BK	WL
1	LII 03MAR 2006	TPC DWG NO REVISED.		

台灣電力公司
TAIWAN POWER COMPANY
LUNGMEN PROJECT FOURTH NUCLEAR POWER PLANT

THIS RECEIPT CONTAINS SAFETY RELATED ITEMS ☒ YES ☐ NO
THIS RECEIPT CONTAINS SEISMIC I(R) ITEMS ☒ YES ☐ NO
PREPARED BY:
3D 單:SIG.

VELAN ORDER NO: X012-273060-N
CUSTOMER: TAIWAN POWER COMPANY
ORDER NO: 8749111M019A1
Taiwan Power Company
Contract No: 8749111M019A1
Lungmen Project Fourth Nuclear Power Plant
Specification Number: 874-MS-019A

VELAN
3" (DN80)
BOLTED BONNET GATE VALVE (CAST)
CLASS 150# (PN20)

DRAWN	CAU	15 FEB 06	
APVD	MB	16 FEB 06	
IND. REV. CERTIFIED	ML	16 FEB 06	
DWG NO	X012-273060-N01A		
SHEET	01 OF 01		
REV	2	DATE: 06-02-13	

設計 APP.	RB	日期 DATE	02-15-06
校核 CHK.	JPB	審定 REC.	N/A
繪圖 DWN.	CAU	終計 ODM.	--
工程圖號 PROJECT DWG. NO.	12345.MS019.A15-22049		
張號 SHT. NO.	1/1	版次 CLASSIFICATION	-

MODEL | ARCH | CIVIL | CONC | STL | LAP | INSP | NO | P.E. | S.A. | FAC | ELEC | LTG | MATL

REF NO: 9911-001

附件四 (1 of 1)

PACKING LIST
SHIPMENT 7

Velan Inc., 7007 Cote de Liesse,
Montreal, Quebec. Canada. H4T 1G2

DATE: MAY 27, 2008

CONSIGNEE:
Taiwan Power Company, Department of
Nuclear and Fossil Power Projects
39 Ho-Ping East Road, Section 1
Taipei, Taiwan,

SHIPPING MARKS:
Cargo Description: Valves
Contract No: 8749111M019A1
Port of Destination: Keelung Taiwan
Consignee: Taiwan Power Company,
Department of Nuclear and
Fossil Power Projects
Box No.: 01 (and up consecutively)
Gross Weight: Kgs.
Net Weight: Kgs.
Caution Marks:
Dimensions:
Consignor: Velan Inc.,
7007 Cote de Liesse,
Montreal, Quebec, Canada. H4T 1G2

B. Alleyne, Export Contract Administrator

PLT	BOX #	TRACKING NO	VELAN SALES NO	CUST PO	CUST PO LINE	POS	QTY	ITEM	TAG NO.	DIMENSIONS L x W x H CM	VOL M³	GROSS WT KGS	NET WT KGS.	CTRY ORIGIN
12	7-128	C12136 -00	273060	8749111M019A1	B01-01	11	6	F10-0064C-49RT	2P26-BV-5831	115 x 110 x 64	0.809	355	273	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5832	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5833	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5834	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5835	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5836	-	-	-	-	CA
12	7-129	C12186 -00	273060	8749111M019A1	B01-01	6	18	F10-0064C-49RT	2P26-BV-5002	186 x 110 x 84	1.718	955	817	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5006	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5010	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5014	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5018	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5022	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5525	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5526	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5527	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5528	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5529	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5530	-	-	-	-	CA

附件五 (1 of 2)

PLT	BOX #	TRACKING NO	VELAN SALES NO	CUST PO	CUST PO LINE	POS	QTY	ITEM	TAG NO.	DIMENSIONS L x W x H CM	VOL M³	GROSS WT KGS	NET WT KGS	C'TRY ORIGIN
12	-	-	-	-	-	-	-	-	2P26-BV-5531	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5532	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5533	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5534	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5535	-	-	-	-	CA
12	-	-	-	-	-	-	-	-	2P26-BV-5536	-	-	-	-	CA
2	CRATES						24	PCS.		TOTALS:	2.527	1310	1090	

☐ 2125 Ward Avenue
Montreal, Quebec
Canada H4M 1T6

☒ 550 McArthur Ave.
Montreal, Quebec
Canada H4T 1X8

VELAN

082019 - 1 THRU - 18

CERTIFICATE OF COMPLIANCE

CUSTOMER: TAIWAN POWER COMPANY ORDER NO.: 8749111M019A1

VELAN ORDER: X012-273060-N POS.: 6 ITEM: B01-01 QTY: 18

FIGURE NO.: F10-0064C-49RT DESCRIPTION: 3" CL150LB BOLTED BONNET (CAST) GATE VALVE

DESIGN SPEC.: ASME SECTION III / (*) DWG. NO.: X012-273060-N01A Rev.: 2

CODE EDITION: EDITION:1989, ADDENDA: NONE / (**) CODE CLASS: 3

TAG NO.: (SEE PAGE # 8 OF 391) / VALVE DESCRIPTION NO.: VGF015 - 3 - Y5ID1 - H

COMPONENT	S/N	H/C	MATERIAL SPEC.	CMTR	PT	MT	UT	RT
BODY	(See Page# 7 of 391)	(See Page# 7 of 391)	CN3MN, ASME SA 351	X				
BONNET	(See Page# 7 of 391)	(See Page# 7 of 391)	CN3MN, ASME SA 351	X				
WEDGE	(See Page# 7 of 391)	(See Page# 7 of 391)	N08367 (AL6XN), ASME SB691	X				
STEM	N/A	(See Page# 7 of 391)	Ty. 630, H1150, ASME SA 564	X				
SEAT	N/A	(See Page# 7 of 391)	N08367 (AL6XN), ASTM B691	X				
STUD	N/A	N/A	Gr. B8M, CL1, ASME SA 193	C of C				
NUTS	N/A	N/A	Gr. 8M, ASME SA 194	C of C				
LEAK OFF PIPE	N/A	(See Page# 7 of 391)	N08367 (AL6XN), ASME SB691	X				
WELD FILLER	N/A	LX0505AK	ASME SFA 5.14, ERNiCrMo-3	X	X			
HARDFACE FILLER	N/A	3050543-1 / 0020601-1	NOREM 02	X	X			

THE ABOVE VALVE(S) WERE MANUFACTURED IN ACCORDANCE WITH (☒)

1. ☒ CERTIFICATE OF AUTHORIZATION N-2797-2 EXPIRY DATE: 20 Apr. 2010
2. ☒ CORPORATE QAM REVISION 11 DATED: 31 Jan. 2007
3. ☒ 10CFR 50 APPENDIX B
4. ☒ 10CFR PART 21.
5. ☒ ASME/ANSI B16.34
6. ☐ PUMP & VALVE CODE
7. ☐ VEL-QC-155, REV. N/A DATED: -
8. ☐ VEL-QCI-1123, REV. N/A DATED: -
9. ☒ VEL-QC-900, REV. 15 DATED: 06 Oct. 2006
10. ☒ CODE CASE N62-7 AND N-539 / VEL-QCI-2869, Rev. 2.

We hereby certify that all valve(s) described above are in compliance with purchase order and specification requirements. The test reports represent the actual attributes of the items furnished and test results are in full compliance with applicable specification and purchase order requirements. NDE indicated has been performed by personnel qualified in accordance with contract, Code and Design Specification requirements.

NOTES: (*) CUST. SPEC. NO. : BOP-S&W SPEC. # 874 - M0033, Rev.2, AMENDMENT 9.
(**) STEM AND BOLTING MATERIAL CONFORMS TO ASME SECTION II PART A EDITION:1989, ADDENDA:NONE.
WELD FILLER MATERIAL CONFORMS TO ASME SECTION II PART C EDITION:1989, ADDENDA:NONE.
SA 351, CN3MN MATERIAL CONFORMS TO ASME SECTION II PART A EDITION:2001, ADDENDA:NONE.
SB 691, N08367 MATERIAL CONFORMS TO ASME SECTION II PART B EDITION:2001, ADDENDA:NONE.

Q.C. DOCUMENTATION MANAGER

J. DeWit VELAN QC Doc Mgr

DATE MAY 05 2008

FORM QAM-09-01, REV.3

☐ 2125 Ward Avenue
Montreal, Quebec
Canada H4M 1T6

☒ 550 McArthur Ave.
Montreal, Quebec
Canada H4T 1X8

VELAN

082019 - 1 THRU - 18

CERTIFICATE OF COMPLIANCE

CUSTOMER: TAIWAN POWER COMPANY ORDER NO.: 8749111M019A1

VELAN ORDER: X012-273060-N POS.: 6 ITEM: B01-01 QTY: 18

FIGURE NO.: F10-0064C-49RT DESCRIPTION: 3" CL150LB BOLTED BONNET (CAST) GATE VALVE

DESIGN SPEC.: ASME SECTION III / (*) DWG. NO.: X012-273060-N01A Rev.: 2

CODE EDITION: EDITION:1989, ADDENDA: NONE CODE CLASS: 3

TAG NO.: (SEE PAGE # 8 OF 391) / VALVE DESCRIPTION NO.: VGF015 - 3 - Y5ID1 - H

COMPONENT	S/N	H/C	MATERIAL SPEC.	CMTR	PT	MT	UT	RT
HARDFACE FILLER	N/A	98-1488	NOREM 2A	X	X			
HARDFACE FILLER	N/A	Z032161	NOREM 02	X	X			

THE ABOVE VALVE(S) WERE MANUFACTURED IN ACCORDANCE WITH (☒)

1. ☒ CERTIFICATE OF AUTHORIZATION N-2797-2 EXPIRY DATE: 20 Apr. 2010
2. ☒ CORPORATE QAM REVISION 11 DATED: 31 Jan. 2007
3. ☒ 10CFR 50 APPENDIX B
4. ☒ 10CFR PART 21.
5. ☒ ASME/ANSI B16.34
6. ☐ PUMP & VALVE CODE
7. ☐ VEL-QC-155, REV. N/A DATED: -
8. ☐ VEL-QCI-1123, REV. N/A DATED: -
9. ☒ VEL-QC-900, REV. 15 DATED: 06 Oct. 2006
10. ☒ CODE CASE N62-7 AND N-539 / VEL-QCI-2869, Rev. 2.

We hereby certify that all valve(s) described above are in compliance with purchase order and specification requirements. The test reports represent the actual attributes of the items furnished and test results are in full compliance with applicable specification and purchase order requirements. NDE indicated has been performed by personnel qualified in accordance with contract, Code and Design Specification requirements.

NOTES: (*) CUST. SPEC. NO. : BOP-S&W SPEC. # 874 - M0033, Rev.2, AMENDMENT 9.

J. DeWit VELAN QC Doc Mgr

Q.C. DOCUMENTATION MANAGER

5 May 2008
DATE

FORM QAM-09-01, REV.3

VELAN

CERTIFICATE OF COMPLIANCE

DATA PACKAGE NO.: 082019 - 1 THRU -18

082019-1	025	H12505	17352	H12505	7065	2FBK	2EUR	2GRQ	2GRU
082019-2	032	H12505	17413	H12505	7076	2FBK	2GPS	2GRQ	2EWQ
082019-3	033	H12505	17410	H12505	7066	2FBK	2GPS	2FRW	2GRU
082019-4	034	H12505	17411	H12505	7072	2FBK	2GPS	2GRQ	2EWQ
082019-5	036	H12505	17409	H12505	7071	2FBK	2EUR	2FRW	2GRU
082019-6	038	H12505	17414	H12505	7068	2FBK	2GPS	2GRQ	2GRU
082019-7	039	H12505	17402	H12505	7070	2FBK	2GPS	2GRQ	2EWQ
082019-8	040	H12505	17349	H12505	7069	2FBK	2EUR	2GRQ	2GRU
082019-9	041	H12505	17369	H12505	7073	2FBK	2EUR	2FRW	2GRU
082019-10	042	H12505	17403	H12505	6759	2FBK	2GPS	2GRQ	2EWQ
082019-11	043	H12505	17368	H12505	7062	2FBK	2GPS	2GRQ	2EWQ
082019-12	044	H12505	17406	H12505	7057	2FBK	2GPS	2GRQ	2GRU
2019-13	045	H12505	17375	H12505	7063	2FBK	2GPS	2FRW	2GRU
082019-14	048	H12505	17370	H12505	7060	2FBK	2GPS	2GRQ	2EWQ
082019-15	049	H12505	17570	H12505	7067	2FBK	2EUR	2GRQ	2GRU
082019-16	050	H12505	17405	H12505	7058	2FBK	2EUR	2FRW	2GRU
082019-17	051	H12505	17576	H12505	7064	2FBK	2EUR	2GRQ	2GRU
082019-18	052	H12505	17376	H12505	6764	2FBK	2EUR	2GRQ	2GRU

J. Del
VELAN
QC Doc Mgr

Q.C. Documentation Manager

5 May 2008
DATE

VELAN

CERTIFICATE OF COMPLIANCE

DATA PACKAGE NO.: 082019 - 1 THRU -18

082019-1	2P26-BV-5002
082019-2	2P26-BV-5006
082019-3	2P26-BV-5010
082019-4	2P26-BV-5014
082019-5	2P26-BV-5018
082019-6	2P26-BV-5022
082019-7	2P26-BV-5525
082019-8	2P26-BV-5526
082019-9	2P26-BV-5527
082019-10	2P26-BV-5528
082019-11	2P26-BV-5529
082019-12	2P26-BV-5530
082019-13	2P26-BV-5531
082019-14	2P26-BV-5532
082019-15	2P26-BV-5533
082019-16	2P26-BV-5534
082019-17	2P26-BV-5535
082019-18	2P26-BV-5536

J. DeWit
VELAN
QC Doc Mgr

Q.C. Documentation Manager

5 May 2008
DATE

DATA PACKAGE NO.: 082019-1 THRU -18

FORM NPV-1 CERTIFICATE HOLDERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES *
As Required by the Provisions of the ASME Code, Section III, Division 1

Pg. 1 of 2

1. Manufactured and certified by Velan Inc., 550 Mc Arthur Street, Montreal, Quebec, H4T 1X8, Canada.
(name and address of N Certificate Holder)

2. Manufactured for Taiwan Power Company, Nuclear/Fossil Power Project 39 Ho Ping E. Road, Sec.1, Taipei, Taiwan.
(name and address of purchaser)

3. Location of installation JENLI VILLAGE, KUNGLIAO HSIANG, TAIPEI HSIEN, YENLIAO SITE, TAIWAN, THE REPUBLIC OF CHINA.
(name and address)

4. Model No., Series No., or Type: F10-0064C-49RT Drawing X012-273060-N01A Rev. 2 CRN N/A

5. ASME Code, Section III, Division 1: 1989 (edition) NONE (addenda date) 3 (class) N62-7 & N-539 (Code Case no.)

6. Pump or valve 150# BB(CAST)GATE VALVE Nominal inlet size 3" (in.) Outlet size 3" (in.)

7. (X) Material: Body ASME SA 351,CN3MN Bonnet ASME SA 351,CN3MN Wedge ASME SB 691,N08367 Bolting B8M,CL1,ASME SA 193 8M, ASME SA 194

(a) Cert. Holder's Serial No.	(b) Nat'l Board No.	(c) Body Serial No.	(d) Bonnet Serial No.	(e) Wedge Serial No.
082019-1	N/A	025	17352	7065
082019-2	N/A	032	17413	7076
082019-3	N/A	033	17410	7066
082019-4	N/A	034	17411	7072
082019-5	N/A	036	17409	7071
082019-6	N/A	038	17414	7068
082019-7	N/A	039	17402	7070
082019-8	N/A	040	17349	7069
082019-9	N/A	041	17369	7073
082019-10	N/A	042	17403	6759
082019-11	N/A	043	17368	7062
082019-12	N/A	044	17406	7057
082019-13	N/A	045	17375	7063
082019-14	N/A	048	17370	7060
082019-15	N/A	049	17570	7067
082019-16	N/A	050	17405	7058
082019-17	N/A	051	17576	7064
082019-18	N/A	052	17376	6764
				(X) LEAK OFF PIPE: ASME SB 691,N08367
082019-1,-2,-4,-6 -7,-8,-10,-11,-12 -14,-15,-17,-18.	N/A	---	---	TRACE CODE:2GRQ
082019-3,-5,-9, -13,-16.	N/A	---	---	TRACE CODE:2FRW

Supplemental information in form of lists, sketches, or drawings may be used provided (1) size is 8 1/2 x 11, (2) information in items 1 through 4 on this Data Report is included on each sheet, (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

PAGE 50 OF 391

FORM NPV-1 (Back - Pg. 2 of 2)

Certificate Holder's Serial No. 082019-1 THRU -18

8. Design conditions 149.97 (1034 Kpa(g)) (pressure) psi 125.6 (52°C) (temperature) °F or valve pressure class 150LB (1)

9. Cold working pressure 275 psi at 100°F
1897 Kpa(g) @ 38°C

10. Hydrostatic test SHELL - 425 (2.93 Mpa(g)) psi. Disk differential test pressure N/A psi
SEAT - 325 psi (2.24 Mpa(g))
AIR SEAT - 80 psi (0.55 Mpa(g))

11. Remarks: AS BUILT VALVE DRAWING.
(X) BOLTING MATERIAL CONFORMS TO ASME SECTION II PART A EDITION:1989, ADDENDA:NONE.
SA 351, CN3MN MATERIAL CONFORMS TO ASME SECTION II PART A EDITION:2001, ADDENDA:NONE.
SB 691, N08367 MATERIAL CONFORMS TO ASME SECTION II PART B EDITION:2001, ADDENDA:NONE.

CERTIFICATE OF DESIGN

Design Specification certified by JANIS BESTUL OSSMANN P.E. State MA, USA Reg. no. 31181

Design report certified by S. ISBITSKY P.E. State QUE., Reg. no. 22115

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that this pump or valve conforms to the rules for construction of the ASME Code, Section III, Division 1.

N Certificate of Authorization No. N-2797-2 Expires 20 Apr.2010

Date 05 May.2008 Name VELAN INC. (N Certificate Holder) Signed (authorized representative)

J. DeWit VELAN QC Doc Mgr

CERTIFICATE OF INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of QUEBEC and employed by REGIE DU BATIMENT of QUEBEC have inspected the pump, or valve, described in this Data Report on 2008/05/27, and state that to the best of my knowledge and belief, the Certificate Holder has constructed this pump, or valve, in accordance with the ASME Code, Section III, Division 1.

By signing this certificate, neither the inspector nor his employer makes any warranty, expressed or implied, concerning the component described in this Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 2008/05/27 signed (Authorized Inspector) Commissions C. CAMPANA QC # 9969 (National Board, State or Province and no.)

(1) For manually operated valves only.

PAGE 08 OF 27

DATA PACKAGE NO.: 082011-1 THRU -6

FORM NPV-1 CERTIFICATE HOLDERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES *
As Required by the Provisions of the ASME Code, Section III, Division 1

Pg. 1 of 2

1. Manufactured and certified by Velan Inc., 550 Mc Arthur Street, Montreal, Quebec, H4T 1X8, Canada.
(name and address of N Certificate Holder)

2. Manufactured for Taiwan Power Company, Nuclear/Fossil Power Project 39 Ho Ping E. Road, Sec.1, Taipei, Taiwan.
(name and address of purchaser)

3. Location of installation JENLI VILLAGE, KUNGLIAO HSIANG, TAIPEI HSIEN, YENLIAO SITE, TAIWAN, THE REPUBLIC OF CHINA.
(name and address)

4. Model No., Series No., or Type: F10-0064C-49RT Drawing X012-273060-N01A Rev. 2 CRN N/A

5. ASME Code, Section III, Division 1: 1989 (edition) NONE (addenda date) 3 (class) N62-7 & N-539 (Code Case no.)

6. Pump or valve 150# BB(CAST)GATE VALVE Nominal inlet size 3" (in.) Outlet size 3" (in.)

7. (X) Material: Body ASME SA 351,CN3MN Bonnet ASME SA 351,CN3MN Wedge ASME SB 691,N08367 Bolting B8M,CL1,ASME SA 19[illegible] 8M, ASME SA 194

(a) Cert. Holder's Serial No.	(b) Nat'l Board No.	(c) Body Serial No.	(d) Bonnet Serial No.	(e) Wedge Serial No.
082011-1	N/A	006	17373	6772
082011-2	N/A	009	17356	7074
082011-3	N/A	020	17400	6760
082011-4	N/A	029	17397	7061
082011-5	N/A	030	17399	7059
082011-6	N/A	031	17404	7075
				(X) LEAK OFF PIPE: ASME SB 691,N08367
082011-3	N/A	---	---	TRACE CODE:2EVJ
082011-1,-2,-4, -5, -6	N/A	---	---	TRACE CODE:2GRQ

Supplemental information in form of lists, sketches, or drawings may be used provided (1) size is 8 1/2 x 11, (2) information in items 1 through 4 on this Data Report is included on each sheet, (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

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FORM NPV-1 (Back - Pg. 2 of 2)

Certificate Holder's Serial No. 082011-1 THRU -6

8. Design conditions 149.97 (1034 Kpa(g)) psi (pressure) 125.6 (52°C) °F (temperature) or valve pressure class 150LB (1)

9. Cold working pressure 275 psi at 100°F
1897 Kpa(g) @ 38°C

10. Hydrostatic test SHELL - 425 (2.93 Mpa(g)) psi. Disk differential test pressure N/A psi
SEAT - 325 psi (2.24 Mpa(g))
AIR SEAT - 80 psi (0.55 Mpa(g))

11. Remarks: AS BUILT VALVE DRAWING.
(X) BOLTING MATERIAL CONFORMS TO ASME SECTION II PART A EDITION:1989, ADDENDA:NONE.
SA 351,CN3MN MATERIAL CONFORMS TO ASME SECTION II PART A EDITION:2001, ADDENDA:NONE.
SB 691,N08367 MATERIAL CONFORMS TO ASME SECTION II PART B EDITION:2001,ADDENDA:NONE.

CERTIFICATE OF DESIGN

Design Specification certified by JANIS BESTUL OSSMANN P.E. State MA, USA Reg. no. 31181

Design report certified by S. ISBITSKY P.E. State QUE., Reg. no. 22115

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that this pump or valve conforms to the rules for construction of the ASME Code, Section III, Division 1.

N Certificate of Authorization No. N-2797-2 Expires 20 Apr.2010

Date 28 Apr.2008 Name VELAN INC. (N Certificate Holder) Signed (authorized representative)

J. DeWit VELAN QC Doc. Mgr

CERTIFICATE OF INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of QUEBEC and employed by REGIE DU BATIMENT of QUEBEC have inspected the pump, or valve, described in this Data Report on 2008/05/01, and state that to the best of my knowledge and belief, the Certificate Holder has constructed this pump, or valve, in accordance with the ASME Code, Section III, Division 1.

By signing this certificate, neither the inspector nor his employer makes any warranty, expressed or implied, concerning the component described in this Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 2008/05/01 signed (Authorized Inspector) Commissions

C. CAMPANA QC # 9969

REGIE DU BATIMENT DU QUEBEC (Nat'l. Bd. (incl. endorsements) and/or Prov. and no.)

(1) For manually operated valves only.

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LUNGMEN PROJECT
RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT:	TPC CONTRACT NO.	SHIPMENT NO.
Taiwan Power Company	8749111M019A1	VEL 007 (UNIT 2)
TPC SPECIFICATION NO. BOP-S&W SPEC. # 874 - M0033	REV. 2	AMENDMENT 9
PRODUCT DESCRIPTION	CARBON AND ALLOY STEEL VALVES (ASME SECTION III, CLASS 2 & 3)	

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.

ITEM NO.	POS.	QUANTITY	TAG NUMBERS
B01-01	6	18	2P26 - BV - 5002, 5006, 5010, 5014, 5018, 5022, 5525 THRU 5536.
B01-01	11	06	2P26 - BV - 5831 THRU 5836.

ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC

AUTHORIZED REPRESENTATIVE

SIGNED	J. DeWit VELAN QC Doc Mgr	DATE	26 May 2008
TITLE Q.C. DOCUMENTATION MANAGER		SUPPLIER	VELAN INC.

TPC REPRESENTATIVE CERTIFICATION[1]

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		DATE	May 29, 2008
TITLE	PROCUREMENT SURVEILLANCE REPRESENTATIVE TPC/DNS QA Engineer	RFA NO.	—

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 nonconform

PAGE 01 OF 391

QUALITY RECORD PACKAGE INDEX
LUNGMEN NUCLEAR POWER PROJECT UNIT 2
CARBON AND ALLOY STEEL VALVES (ASME Section III Class 2 & 3)

TPC Order No.	Velan Order No..	Item	Remarks
8749111M019A1	X012-273060-N	B01-01	VEL 007

Volume #	File Sec. No.	TYPE OF RECORD	Page No.
		QA Record Index	1
1	01	Buyer's Product Quality Certificate (PQC)	2 - 3
1	02	Supplier's Certificate of Compliance (C of C)	4 - 11
1	03	ASME Code Design Reports	12 - 47
1	04	ASME Code Data Reports	48 - 52
1	05	As Built Outline and Assembly Drawings	53 - 54
1	06	Weld Procedures	55 - 59
1	07	Hardface Procedures	60 - 68
1	08	Major Weld Repair Records (as applicable)	69
1	09	NDE Records	70 - 73
1	10	Hydrostatic and Leak Test Report	74 - 98
1	11	Visual, Dimensional and Wall Thickness Inspection Record	99 - 151
1	12	Ferrite Test Results for Stainless Steel Castings and Weld Filler Materials (if applicable)	152
1	13	Intergranular Corrosion Test And Critical Pitting Test Results	153 - 173
1	14	Radiograph Review Records	174
1	15	Radiographs	175
1	16	Buyer's Deviation Disposition Request and Supplier's Related Non Conformance Report	176
1	17	CMTR Code and Code Case N62 Parts	177 - 273
1	18	CMTR Weld Filler Materials	274 - 280
1	19	CMTR Hardface Materials	281 - 289
1	20	Heat Treat Records (as applicable) (No. 17 above)	290
1	21	Mill Certified Test (Material Test Report)	291
1	22	List of Safety Related Valve Parts and Components Procured from Non NQA1 Suppliers is Tabulated on Each Project Drawing Material List as " * " (No. 5 above)	292
1	23	Operating and Maintenance Manual	293 - 372
1	24	The Procedure for Procurement of Safety Related Parts and Components from Non NQA1 Suppliers	373 - 379
1	25	Inspection Personnel Qualifications	380 - 387
1	26	Welder Qualifications	388 - 391

Shyh-kuei Lo
TPC/DNS
May 29, 2008

Total Pages = 391

VELAN DEVIATION REPORT

DR 30283 V6

PART NUMBER	PART CODE	DESCRIPTION
F10-0064C-49RT	—	BODIES & BONNETS

DRAWING NUMBER / REV	MATERIAL SPEC	QCI / REV	NCLASS	ISO	MIL
X012-273060-N01/8	SA351 CN-3MN	4216 7	3	—	—

VALVE CUSTOMER	SHOP ORDER #	VENDOR NAME	VENDOR CODE
TPC	—	AMPO	—

VELAN ORDER #	ITEM	VELAN PURCHASE ORDER #	ITEM
X012-273060-N	ALL	206562,210613	—

TOTAL QUANTITY	QTY INSPECTED	ACC	REJ		HEAT CODE #	SERIAL NO.
52 BONNET 51 BODY	ALL	0	ALL		ATTACHED	—

DEVIATION

REQUIRED BY DWG / SPEC	ACTUAL
CONTRACT 8749111M019A1 SPEC 87H-M0033 para 3.3.6.1.3.3 CRITICAL PITTING TEST (CPT) ASTM G48 METHOD C @ 49°C	FOUNDRY DID NOT PERFORM CPT ON CN-3MN UNIT 1 : 24 PCS } BODIES AN. UNIT 2 : 24 PCS } BONNETS (plus spare castings)

INSPECTOR / DATE	QC MANAGER / DATE	PURCHASED PART	YES	WORK CENTER	—
Z.P AUG 8/06	Aug 8/06	MANUFACTURED PART	—	OPERATOR	—

DISPOSITION

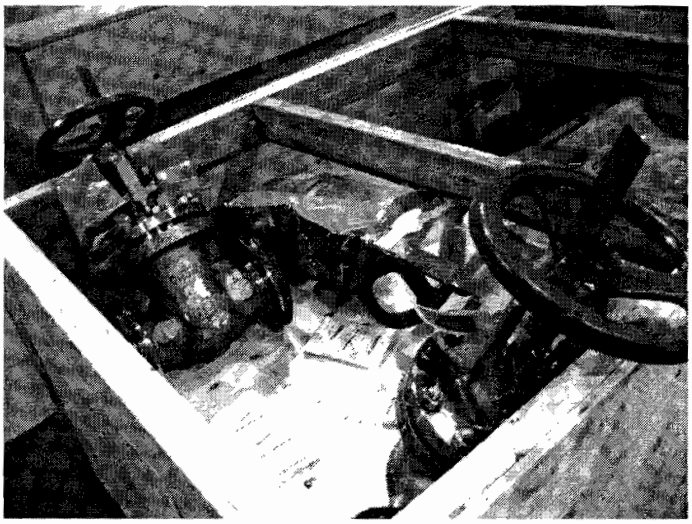
Velan proposes acceptance of this non conformance based on (a) low design temperature (b) calculated CPT well above 49°C for all castings (c) acceptable IGT A262 Practice A

ACCEPT AS IS	REPAIR	SCRAP	REQ'D CHANGE	RTV	MRB	ENG	CUSTOMER / ANI	QA	DEFECT CODE
—	—	—	✓	—	NAME				
					DATE	Aug 09/06		Aug 8/06	

龍門計劃MS019A1採購案品質查驗

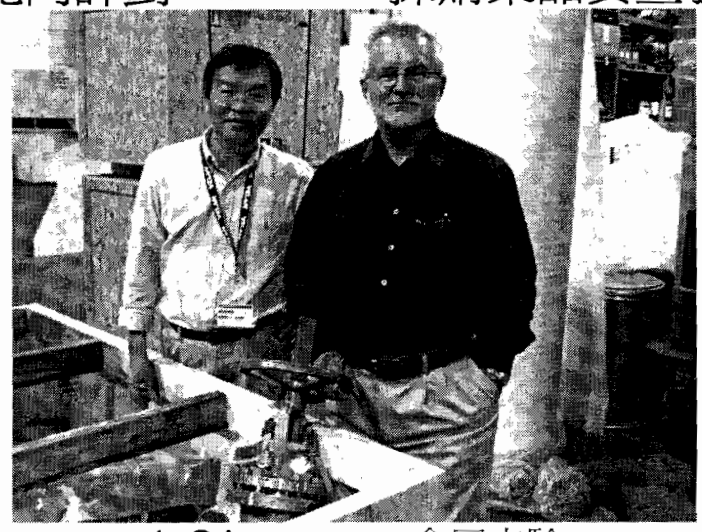
1. 查驗Valve表面清潔

2. 查驗Tagging標識

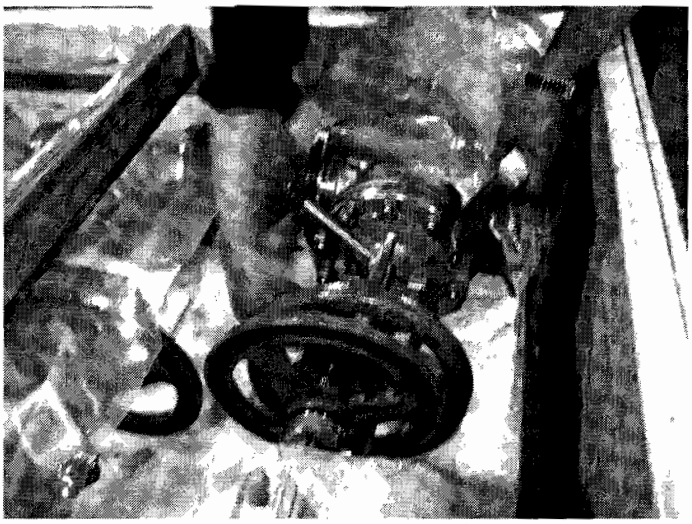


3. 查驗Valve尺寸

龍門計劃MS019A1採購案品質查驗



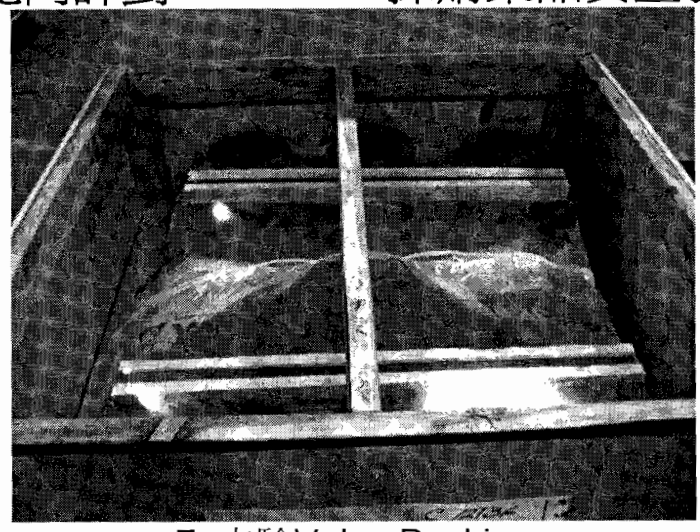
4. QA manager 會同查驗



5. 查驗Valve包裝

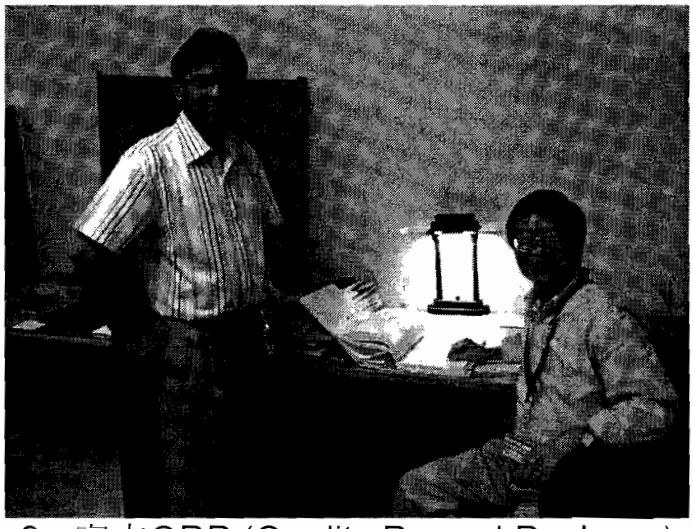
6. 查驗Valve Packing

龍門計劃MS019A1採購案品質查驗



7. 查驗Valve Packing

8. 查驗Valve Shipping Mark



9. 審查QRP (Quality Record Package)

台灣電力公司
核能火力發電工程處
DEPARTMENT OF NUCLEAR AND FOSSIL POWER PROJECTS
TAIWAN POWER COMPANY
P. O. BOX NO.13-202
TAIPEI, TAIWAN, REPUBLIC OF CHINA

TLX : 21602 TAINUFOS
FAX : (02)2391-0281
02)2391-0216
TEL : (02)2391-0241

Fax to: NKM Noell Special Cranes GmbH & Co KG
Fax No: 002 49 931 903 1080
Attention: Mr. Karl Manger, Project Manager

N4F-04078009- PELP
July 7, 2004

Subject: Taiwan Power Company
Lungmen Project, Fourth Nuclear Power Plant Units 1&2
Contract No. 8749011M04000 Reactor Building Cranes and Auxiliary Fuel Building Crane
Contract Amendment (Extension of Installation/Erection Completion Date and Related Terms and Conditions)

Code: Important & Urgent!

Gentlemen,

Please be advised that the revised Installation/Erection Completion Dates for the subject Contract has been approved by TPC's top management. TPC hereby agrees to extend the Installation/Erection Completion Dates without change to the Contract Price as follows:

Equipment Description	Forecast Installation Start Date (Reference Only)	Installation/Erection Completion Date
Unit 1 Reactor Building Crane	3/31/2006	8/31/2006
Unit 2 Reactor Building Crane	3/31/2007	8/31/2007
Auxiliary Fuel Building Crane	9/30/2005	2/28/2006
Unit 1 Maintenance Hoists	3/31/2006	8/31/2006
Unit 2 Maintenance Hoists	3/31/2007	8/31/2007

In addition, the related terms and conditions shall be changed and enforced as follows:

1. **add additional requirements for "After NKM Noell's completion of manufacturing work" as follows:**

   NKM Noell shall notify TPC/S&W to make necessary inspections at its plant site and issue related quality control documents and S&W shall perform necessary inspections and signing of PQC with the confirmation of no pending item for record before putting the equipment into storage.

DEPARTMENT OF NUCLEAR AND FOSSIL POWER PROJECTS

TAIWAN POWER COMPANY

2. **add additional requirements for "Inspection during storage period" as follows:**

During the storage period, Noell is responsible for the routine/periodical monitoring, necessary maintenance and other activities as required for protecting the equipment from any loss or damage. Noell shall prepare and submit "Special Storage Requirements" to TPC/S&W for review and approval in advance and shall strictly follow the requirements as set forth in the "Special Storage Requirements" to store the Equipment in the facility properly. When necessary, TPC will dispatch its representative to the facility to execute/perform monitoring and/or inspection.

3. **modify Para. 2.2.2.1.1.B for Equipment payment and required payment documents as follows:**

For eighty percent (80%) of the Price for foreign equipment:
The payment of eighty percent (80%) shall be made when the Foreign Portion have been passed the inspection and have been properly stored at NKM Noell's (Noell) facility (including its foreign Subsupplier's facility). The documents as required for payment request shall include the following:

1) The Supplier's signed commercial invoice;
2) Material list for the Equipment to be temporarily stored in Noell's facility (including its foreign Subsupplier's facility);
3) Certificate of completion of manufacturing after inspection (signed PQC) and certificate of completion of Equipment storage after placing into storage; accompanied with pertinent photos as evidence;
4) Supplier's firm statement stating the following:
   a) The Supplier has completed the manufacturing of the equipment;
   b) The equipment has been inspected by TPC/S&W and is acceptable;
   c) The equipment has been properly stored in the storage area in accordance with the "Special Storage Requirements".

For five percent (5%) of the Price for foreign equipment:
The payment of five percent (5%) shall be made after the delivery of the Foreign Portion to TPC's Job Site. The documents as required for payment request shall include the following:

1) The Supplier's signed commercial invoice;
2) Packing list;
3) All QA documents before storage;
4) Maintenance Record during storage period with Photos;
5) Signed PQC before storage;
6) Signed PQC before delivery (Release for Shipment);
7) Temporary receiving certificate issued and signed by TPC's Job Site.

DEPARTMENT OF NUCLEAR AND FOSSIL POWER PROJECTS

TAIWAN POWER COMPANY

4. **modify Para. 2.6.1 under the Para. 2.6 " TITLE AND RISK OF LOSS OR DAMAGE " as follows:**

   Upon making payment for eighty percent (80%) of the price for Foreign Portion, the title of the Material/Equipment shall be transferred to TPC immediately. However, Para. 2.6.2 and 2.6.3 remains unchanged.

5. **Before delivery:**

   Before Noell initiates the shipping, Noell should send an advance notice to TPC in a timely, then TPC will dispatch its representatives to Noell to make necessary inspections and sign a new PQC and maintenance record during storage period with photos as evidence.

Except those changes stated above, the remaining terms and conditions, including Contract Price under the subject Contract shall remain unchanged.

Meanwhile, please be advised that for the implementation of the subject Contract, this letter for subject change shall become a part of Contract Documents. Therefore, TPC hereby requests NKM Noell to provide your confirmation with agreement to the above change and this letter shall be treated as part of the Contract Documents. Please return your confirmation with agreement by fax on/before July 16, 2004 and sent the original of your confirmation letter to us for record.

Your attention and prompt response to the above will be highly appreciated.

Sincerely yours

H.I. Lu
Director, DNFPP

cc: Mr. S.H. Liao, TPC-DNE Project Manager (02-2367-1675)
Mr. Sheldon Chow, S&W Taipei (02-2696-3357)
Mr. C. H. Liu, TPC-Site Manager (02-2490-2402)

台灣電力公司
核能火力發電工程處

DEPARTMENT OF NUCLEAR AND FOSSIL POWER PROJECTS

FAX: (02)2391-0281
(02)2391-0216
TEL: (02)2391-0241

TAIWAN POWER COMPANY
P.O.BOX NO. 13-202
TAIPEI,TAIWAN,REPUBLIC OF CHINA

N4F-00803-010251-PELE

March 19, 2008

Fax to: NKM NOELL Special Cranes GambH & Co KG
Wuerzburg, German
Fax No.: 002-49-931-404-731-080; 002-49-931-404-731-000
Attention: Mr. Karl Manger, Project Manager
Subject: Taiwan Power Company
Lungmen Project, Fourth Nuclear Power Plant Units 1&2
Contract No.8749011M04000, Reactor Building Cranes and Auxiliary Fuel Building Crane
Delivery for Unit 2 RBC Trolley from Europe to Lungmen Site
Reference: 1. NOE-TPC-MS040-000026, dated March 10, 2008
2.DNE-NOE-0710-1008-M43, dated October 16, 2007
Code: Urgent!!

Dear Mr. Manger,

Please be advised that the equipment of Unit 2 RBC shall be delivered to Lungmen jobsite before the end of July, 2008 in accordance with the ref. letter 2.

If you have any question regarding this matter, please do not hesitate to contact TPC.

Sincerely yours

H.K Lai
Project Manager, DNFPP

cc: Mr. S.H.Liao, TPC-DNE (02-2367-1675)
Mr. D.C. Chiu, Site Director (02-2490-2402)
Mr. M.S. Chang, DNS Director (02-2367-7885)

NKM NOELL NKM Noell Special Cranes GmbH & Co KG	Inspection Report	No.: 06-020007-11 Page 1 of 1

Storage Inspection

according to Special Storage Requirements,
Document No. 27015.MS040.06-020007

Additional check of indicator and corrosion protection inside main hoist gear boxes every 6 month: **Yes** ☒ **No** ☐

Component :	Inspection result
Trolley of RBC Unit 2	without objection

Inspection remarks: _____

_____

_____

Maintenance activities required: **No** ☒ **Yes** ☐

Inspector	Client resp. Third Party Inspector
30.05.2008, Wolf Peter Date, Signature	Date, Signature

NKM Noell QS 12

NKM NOELL NKM Noell Special Cranes GmbH & Co KG	**Inspection Report**	No.: 06-020007-10 Page 1 of 1

Storage Inspection

according to Special Storage Requirements,
Document No. 27015.MS040.06-020007

Additional check of indicator and corrosion protection inside main hoist gear boxes every 6 month: **Yes ☒** **No ☐**

Component :	Inspection result
Trolley of AFBC	without objection
Container No. 3: RBC Unit 2 – Trolley attachments	without objection
Container No. 4: RBC Unit 2 – Bottom Blocks	without objection
Container No. 8: RB Unit 2 Hatch Hoist Room 420	without objection
Container No. 9: RB Unit 2 Hatch Hoist Room 430	without objection

Inspection remarks: _____

_____

_____

Maintenance activities required: **No ☒** **Yes ☐**

Inspector	Client resp. Third Party Inspector
20.10.2007, Wolf Peter Date, Signature NKM Noell QS 12	Date, Signature

LUNGMEN PROJECT

RELEASE FOR SHIPMENT

Product Quality Certificate

CLIENT : Taiwan Power Company	TPC CONTRACT. NO. 87490011 M04000 AMENDMENT 1 & 2	SHIPMENT NO. MS 040-00005
TPC SPECIFICATION NO. 31113.61.1210	REV. 4	ADDENDA N.A.
PRODUCT DESCRIPTION	Reactor Building Trolley, Unit 2, 2F31-CRN-0001	

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.

ITEM NO.	QUANTITY
2F31-CRN-0001	Fabrication of trolley frames, rope drums, bottom blocks, shafts, axles and miscellaneous machinery equipment, assembly of trolley and cabling on trolley including workshop test. This PQC is valid for the Trolley to be shipped as cargo according to attached packing list. (This PQC is shipping release)

ALL SUPPORTING DOCUMENTATION REQUIRED BY THE ABOVE REFERENCED DOCUMENTS HAVE BEEN ISSUED TO TPC

AUTHORIZED REPRESENTATIVE.

SIGNED Manager	DATE May 30, 2008
TITLE Project Manager	SUPPLIER NKM NOELL

TPC REPRESENTATIVE CERTIFICATION[1]

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."

	AUTHORIZED DEVIATIONS AND NONCONFORMANCES HAVE BEEN NOTED BELOW.
SIGNED Shyh-Kuei Lo	DATE June 3, 2008
TITLE QA Engineer TPC/DNS	RFA NO. —

DEVIATIONS/NONCONFORMANCES FROM PURCHASE ORDER REQUIREMENTS

1 – **The performance of inspections by S&W/TPC shall in no way impair TPC's right to reject nonconforming work or release or discharge the Supplier from any of its obligations under the contract.**

Attachement to PQC for Item 2F31-CRN-0001

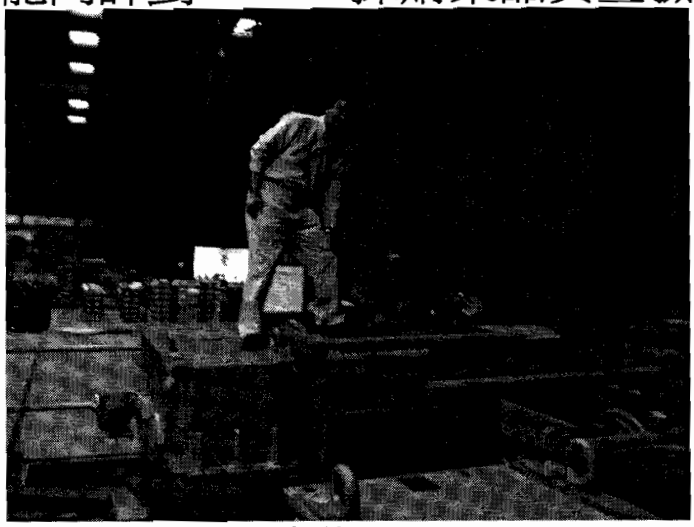
Parts from KPS to place of storage:

	Gross Dimension [m]			Volume	Weight	Total
	Length	Width	Height	[m³]	approx. [t]	Weight [t]
1. Trolley						
1 RBC Trolley Unit 2	9,2	5,8	2,5	133,4		65
2. Container						
Container No 3:						
2 RBC Unit 2 Trolley Wheel Girder with Drive	5,2	1,6	1,1		10,5	
2 RBC Unit 2 Trolley Wheel Girder Safety Brackets						
1 RBC Unit 2 Trolley Power Supply Attachement	2,4	0,83	0,45		0,1	
1 RBC Unit 2 Access Ladder	2,8	0,9	1		0,05	
1 RBC Unit 2 Access Platfrom	1,7	1,1	0,9		0,1	
Box Connection Parts for Trolley Attachements; Hydraulic Hand Pump with Hose,					0,1	10,85
Container No 4:						
1 RBC Unit 2 Sheave Block Main Hoist	2,9	1,4	1,5		9,5	
2 RBC Unit 2 Sheave Block Aux. Hoist	1,9	0,51	0,51		0,95	
2 RBC Unit 2 Main Hoist Rope	1,1	1,1	0,95		3,1	
4 RBC Unit 2 Aux. Hoist Rope	0,6	0,6	0,5		0,4	13,95

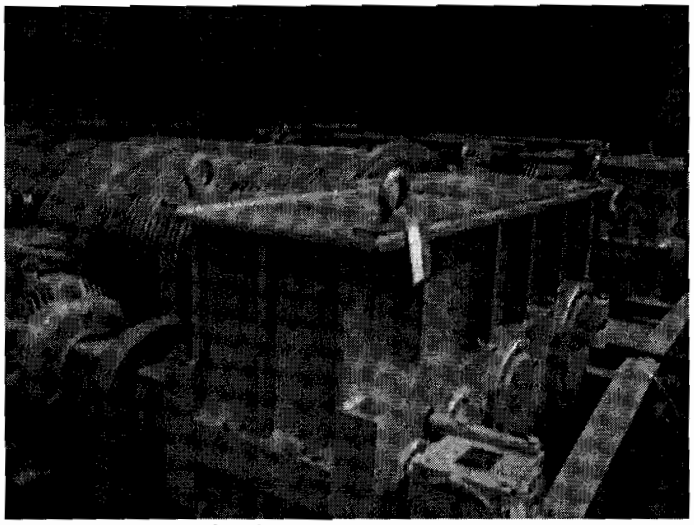
S & W
S H H
JAN 6 (765)

附件十四 (2 of 2)

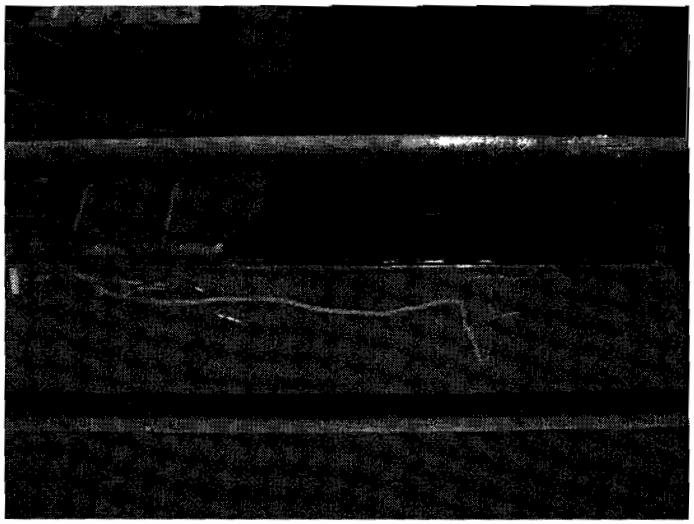
龍門計劃MS040採購案品質查驗



1. 查驗Trolley

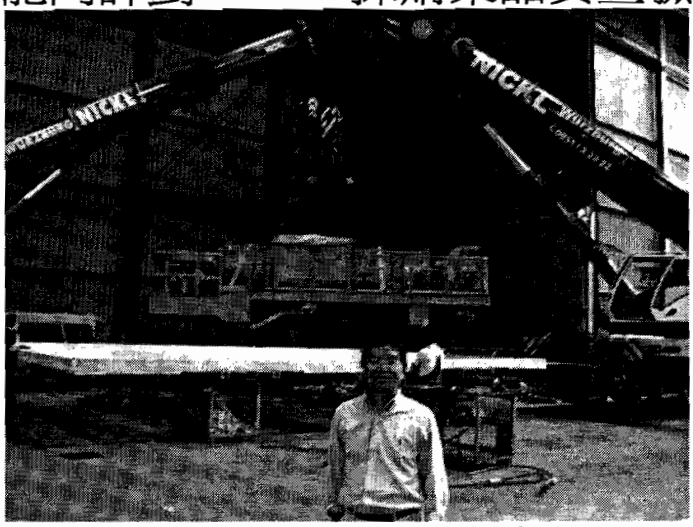


2. 查驗Trolley Gearbox

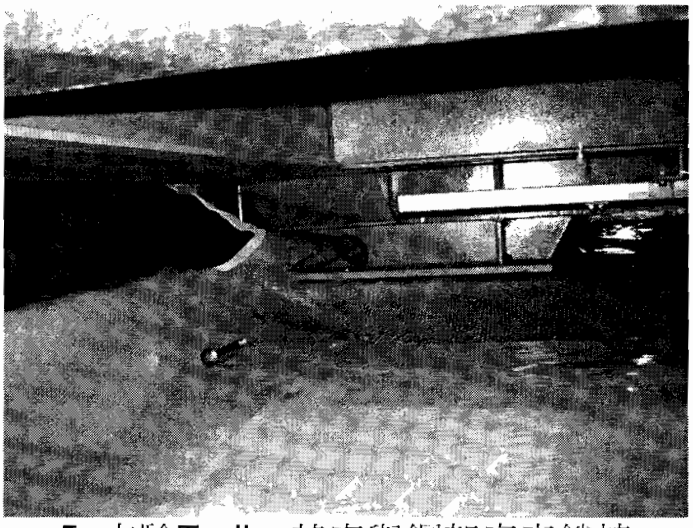


3. 查驗Trolley鋼樑噴漆

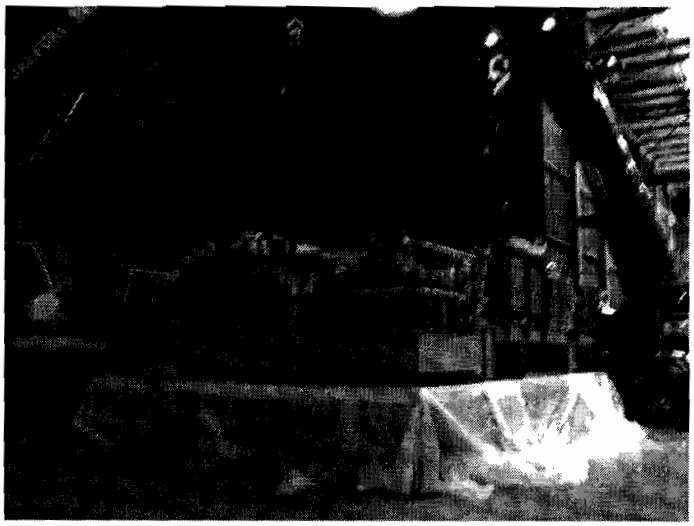
龍門計劃MS040採購案品質查驗



4. 查驗Trolley包裝鋼架底座

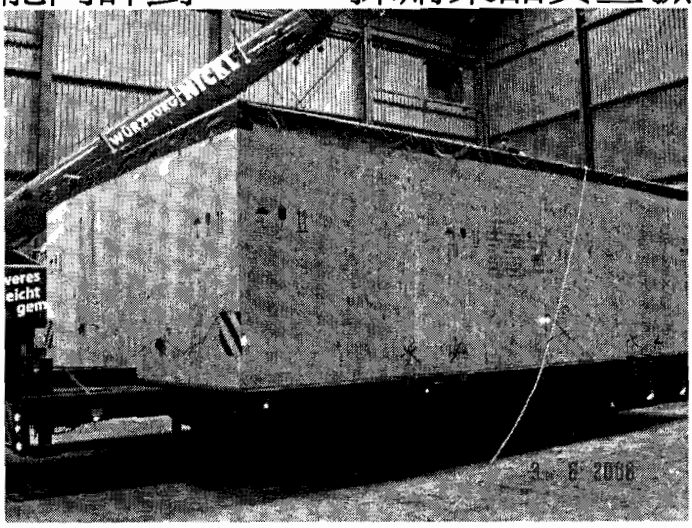


5. 查驗Trolley基座與鋼架底座鎖接



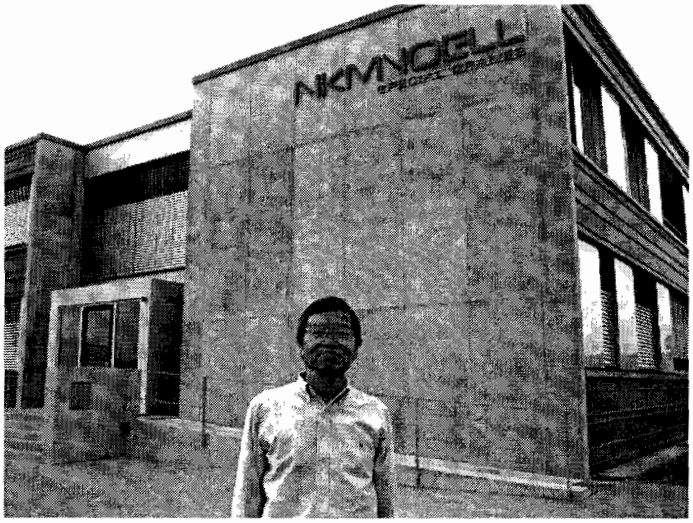
6. 查驗Trolley Packing

龍門計劃MS040採購案品質查驗



7. 查驗Trolley Packing

8. 查驗Trolley運輸準備



9. 赴Noell審查QRP