

出國類別：出國考察

與 NPCC 等公司討論 Normal Paraffin 銷售事宜 出國報告

服務機關：中國石油股份有限公司
(溶劑化學品事業部
法務室、煉製事業部)

報告人：林榮盛

職稱：執行長

報告人：陳曉東

職稱：法務室管理師

報告人：楊家敦

職稱：大林廠生管課長


報告人：劉佳南(報告整理人)

職稱：化學品營運組經理

出國期間：92年09月21日至92年09月024日

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C09203846

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系統識別號	C09203846
類名	貿易、市場調查
類號	E6、E8
出國計畫/報告名稱	洽NPCC公司等客戶討論正烷烴銷售事宜
出國人員	林榮盛 中國石油股份有限公司 溶濟化學品事業部 執行長 劉佳南 中國石油股份有限公司 溶濟化學品事業部 經理 陳曉東 中國石油股份有限公司 法務室 管理師 楊家敦 中國石油股份有限公司 煉製事業部大林廠 課長
計畫主辦機關	中國石油股份有限公司
出國類別	考察
出國地區	日本
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是否含附件	否
報告書摘要	(本資料內容係由報告人鍵入提供) 本案的主要目的：本公司煉製事業部大林廠正烷烴(Normal Paraffin, 簡稱NP)工場預定年底完成年產量130,000噸的建廠，為安排正烷烴產品銷售，溶劑化學品事業部已與印度TPL公司、大陸金桐公司、日本三井公司、日本三菱公司、日本三菱化學公司、印尼UIC公司、日本NPCC公司、台灣FUCC公司等接觸，期待能敲定銷售合約，其中UIC、NPCC、FUCC為直接客戶，需求量合計70,000噸/年，列為優先銷售對象。日前與UIC、NPCC和FUCC討論中，UIC、NPCC和FUCC共同提議於九月廿二日至廿三日於日本見面討論。為儘速達成正烷烴銷售任務，由溶劑化學品事業部林榮盛執行長和劉佳南經理、煉製事業部大林廠生管課楊家敦課長、法務室陳曉東小姐一同到日本參與協商。此行的主要結論為：客戶預期明年正烷烴供應量將過剩，因此客戶建議一半數量每季以SPOT洽購，一半數量簽長期合約，SPOT價格不依公式計價，由買賣雙方出價、選價，如達到共識即完成交易，否則各自尋找對象再洽商。至於長期合約買方原則同意NP=Kerosene MOPS+á值，但á值多少才是合理買賣雙方觀點差異甚大。另客戶因為生產LAB成本考慮，希望分子量在163~168之間，顏色也希望透明清澈(SAYBOLT=30 min.)，另Carbon Distribution也是重要規範，大林廠因為工廠尚未試車，UOP又以簡單之規範為設計驗收之依據，因此我方的產品規範需要進一步研究和確定。
電子全文	本電子檔由報告人提供，下載前請確定您的機器有防毒保護！確定要下載？ C09203846.doc wordview程式下載
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壹：出國考察目的

- 一、煉製事業部大林廠正烷烴工場年生產量 130,000 噸，國內需求量僅約 20,000 噸，其他約 80% 需外銷，正烷烴工場將於今年十二月建廠完成，明年一月開始測試，預計明年二月開始供應市場，溶劑化學品事業部(簡稱溶劑部)負責銷售，溶劑部自今年七月開始即積極與用戶聯繫，如和益、和桐、日本 NPCC、印尼 UIC、印度 TPL、日本三井、日本三菱公司，因和益、日本 NPCC、印尼 UIC 為直接用戶，列為第一優先討論對象，今年八月於台北雙方有初步討論，在規範、輸運有共識，但對價格及付款條件則有些差距，日方提議於九月下旬在日本雙方再協商。
- 二、溶劑部與法務室已準備銷售合約的草約，就產品規範、輸運及付款條件提出說明。合約如附件(一)
- 三、溶劑部提出以煤油為基礎之 NP 計價公式，大林廠亦派技術組楊家敦課長參與，就 NP 之成本、品質和生產計劃提供支援，希望買方了解賣方計價之根據及合理性。
- 四、溶劑部希望和益、NPCC、UIC 能購買 80,000 噸/年，此銷售量可達到大林廠之最低操作量，其他部分溶劑部再找客戶銷售，此種模式將可提高大林廠之設備利用率。

貳：出國考察行程

- 一、92.09.21：起程(台北→札幌)
- 二、92.09.22：銷售討論
- 三、92.09.23：銷售討論
- 四、92.09.24：回程(札幌→台北)。

參、工作內容

1. 溶劑部所提出 NP 計價 = Kerosene(MOPS) + ###USD/Ton CFR
TaLin port Kaohsiung ,Taiwan
Kerosene 是以 B/L 出貨前三十日(含出貨日)之新加坡 Platts 上限及下限平均值, Freight fee 扣除??USD/ton(三家平均值)
2. 和益陳總經理提出, NP 之規範與 LAB 品質有很大關係, 希 CPC 能生產符合客戶需求規範之產品。
和益可以給大林廠一些樣品, 由大林廠以 GC 分析 C9 ~ C13 之分佈情況, 一般 LAB 分子量是 242 扣除苯分子量 78 及二個氫, NP 分子量是 163 ~ 165, 但 carbon distribution 分布很重要, 另 LAB 客戶要求 color 是愈白愈好, 所 color 規範宜訂 30, 純度宜訂 99 以上。
NPCC 認為必需控制 NP 原料油之成分, 才能生產符合規範之 NP。
3. 林執行長指出, CPC 可考慮研究是否在試車前, 派操作人員到 NPCC, 學習操作及生產成本控制。
4. FUCC 怕 CPC 以 FOB 賣 NP 給其他客戶, NP 會到處賣, 擾亂 LAB 之市場, 希望 CPC 以 CFR 賣才能控制產品流向, 但 CPC 是國營公司, 目前要做 CFR 有困難, 暫以 FOB 來做, 但如何控制流向, 請 FUCC、NPCC 提供意見。
5. NPCC 出價 = Kerosene + 1**~1&&USD/TON, 此價格 CPC 無法接受, 建議隔天再議。
6. 和益怕 CPC 銷售 NP 給和桐, 和桐生產過剩之 LAB 會競爭到和益之 LAB 市場, 因此 CPC 於 09/23 提出另一 proposal:
(1) FUCC 等三家公司必須承諾購買 80,000 ~ 100,000 噸, CPC 降低價格如下
(2) 價格 = Kerosene (MOPS)+1@@ USD/TON Kaohsiung ,Taiwan
7. FUCC 提出簽一雙方共識之購買量合約, 但價格每季談, 如價格談不攏, 雙方就放棄, CPC 認為此種合約對 CPC 不利, 倒不如每季 Spot 談價格及數量。
8. NPCC 預測下年度 NP 工廠之設備利用率只有 69% 所以 NP 價格會下

滑，NPCC 提出之價格是

NP 價格 = Kerosene + 1## USD/TON

9.中油認為 NP 之價格應以歷史來推斷較準確，不宜以未來預測價格

中油無法接受 NPCC 提出之價格。

10.希望十一月再協商，地點在嘉義

肆、心得與建議

1.NP 之主要用途是當 LAB 之原料，但也可以用來生產溶劑、潤滑油、清潔用醇、氯化烷烴、檸檬酸與磺酸物等，使用比率約如下：

LAB 原料	85%
溶劑及潤滑油	2.5%
氯化衍生物	1.5%
清潔醇	9.5%
磺酸物	1.5%

2.製程

煤油 → 分子篩分離(UOP MOIEX) → NP → LAB

3.大林廠 NP 投資計畫：NP 產能 130,000 噸，2002 年 7 月正式動工，預計 2003 年 12 月完工，總投資額 26 億台幣，2004 年 2 月正式供貨，溶劑部負責銷售，因時間緊迫，所以溶劑部與相關廠商密切聯繫，就規範、輸儲作業、付款、供應數量及價格加以協商。

4.溶劑部每次與廠商協商時都通知大林廠派員參加，協商後之會議記錄也馬上告知大林廠，溶劑部與大林廠之聯繫相當良好，目前大林廠之輸儲設備有外銷 Shore Tank 25000KL 1 PCS、5000KL 2 PCS、3000KL 4PCS、內銷儲槽 1000KL 4PCS，雙方也同意以 NP=Kerosene MOPS + α 值計價來銷售，至於 α 值之目標雙方也有共識，因時間緊迫，所以溶

劑部已請大林廠提出生產計畫，溶劑部將配合大林廠之生產計畫來銷售。

5. 亞洲地區 2004 年生產 NP 之競爭者如下：

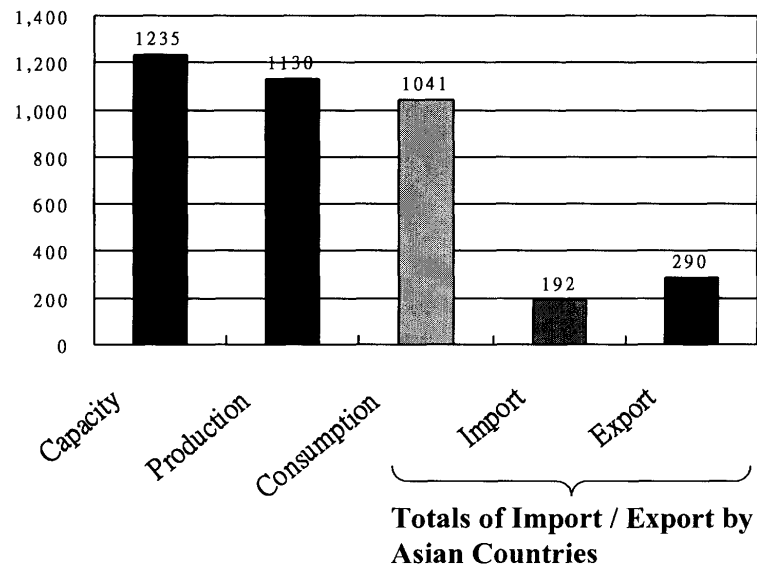
溶劑部在這幾個月蒐集相關資料列出台灣鄰近地區之相關 NP 及 LAB 廠之 NP 使用量，發覺 NP 之過剩量不如客戶之所言程度：

千公噸	NP 生產容量	自己有 LAB 廠 自用 NP 數量	剩餘 NP 數量
台灣 CPC	130	0	130
台灣和桐	65	0	65
台灣和益	0	40	-40
日本 NIKKO	150	60	90
日本 NPPC	75	85	-10
日本 MCC	0	45	-45
韓國 ISU	200	136	64
大陸撫順化工	280	280	0
大陸北京化工	15	15	0
大陸金陵	150	100	50
大陸金桐	0	160	-160
馬來西亞 Shell	45	0	45
印尼 UIC	0	85	-85
印度 TPL	40	60	-20
印度 Reliance	135	135	0
印度 Nirma	65	65	0
合計	1350	1266	84

6. NP 之主要用途在製造 LAB，在日本、台灣、韓國等開發中國家 LAB

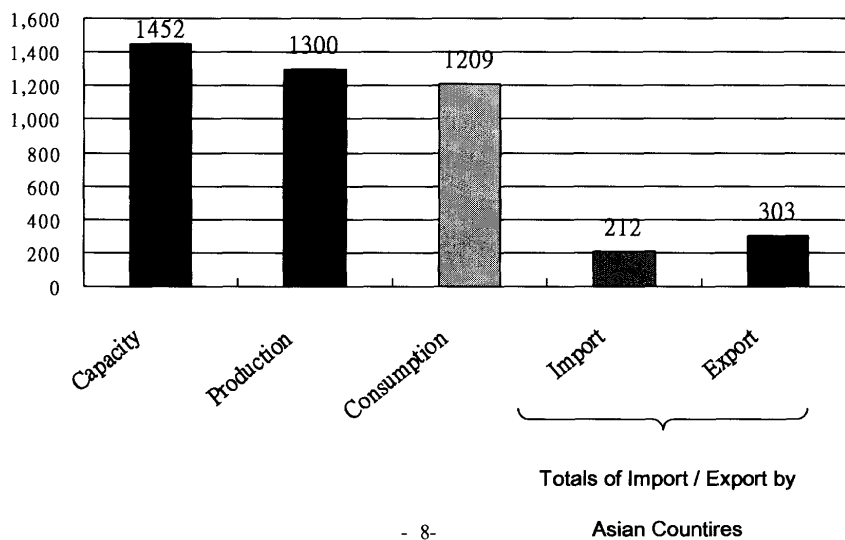
消耗成長率約 2~3%，但在未開發國家如大陸、印度、越南、印尼 LAB 消耗成長率約 5~6%，目前 LAB 是供過於求，LAB 市場情況如下圖：

KMT/Year 亞洲2002年



亞洲 2004 年預估 LAB 市場如下：

KMT/YEAR



4. 製造每噸 LAB 需 0.85 噸 NP，所以由 2004 年亞洲 LAB 之需求量
 1,300,000 噸 $\times 0.85 = 1,105,000$ 噸，還有其他用途約 161,000 噸共需
 1,266,000 噸，但 NP 之各廠製生產量 2004 年達 1,350,000 噸，NP 生產
 大於需求價格無法提高。

5. 因為 LAB 之需求不如預期，各工廠之 NP 產能又足夠，隨時可增產
 NP 情況下，NP 之市場確實相當競爭，本公司大林廠 NP 即將於 2004
 生產，溶劑部負責銷售，從溶劑部銷售 NP 洽談進度如下：

2002/02/26	UIC	與 CPC 簽 LOI 購買意願書
2002/06/27	三菱	
2003/05/12	TPL	
2003/07	TPL	TPL 投資沙烏地 GPC LAB 廠將於 2005 年完工， 自 2006 年每年需 NP 40,000 噸，另印度 TPL LAB 廠擴廠，自 2004 年起每年約需 15,000-20,000 噸，卸口港 chennai，希以 NP=LAB-B 值作價 提出 TPL NP 規範
2003/08	日本三井 金桐	希代銷 CPC NP，以 LAB-B 值計價 同意以 Kerosene MOPS+ α 值計價 金桐每年希從 CPC 購 4-6 萬噸，卸口港金燕港， 僅 10,000 噸以下船隻能過江陰大橋，因橋高僅 23 米，大船無法過
2003/09	三菱商事 三菱化學 和桐 NPCC、FUCC、UIC	希代銷 CPC NP，另提一計價公式 提供三種規範 LAB、80/20ALCOHOL、70/30 ALCOHOL 和桐出價 Kerosene MOPS+ α 值， α 值差距大， 希簽一半 SPOT，一半長期合約 在日本函館會談，價格差距較大，客戶希以其規

	意大利 TEMIX	範供貨, 來函詢問洽購
2003/10	印度 TPL 和桐	再洽談價格, 雙方差距拉小 再洽談價格, 雙方差距拉小 希望明年二月供貨 希望以其規範為主

6. 亞洲地區 NP 之品質是有些差異, 主要與製程有關係, 馬來西亞 SHELL 公司是用 GTL 製程由天然瓦斯轉換成汽油、柴油、NP, 總共年產量 50 萬噸, 其中 LAB 級 NP 45,000 噸, C14~C17 級 NP 45,000 噸, 其純度較差僅 95%, 但 Carbon Distribution 較重, LAB 轉換率較差約 75%, 其他廠如韓國 ISU 使用 UOP MOIEX 製程, 其純度較好, 但 Carbon Distribution 較輕, 轉換率高, 目前客戶注重 Carbon Distribution, 希望分子量在 163~168 之間, 大林廠擬以 UOP 規範銷售, 是無法被客戶接受, 大林廠之 UOP 規範如附件(二), UIC 規範如附件(三), 和桐之規範如附件(四), 印度 TPL 規範如附件(五), MCC 之 LAB 級規範如附件(六), MCC 之 ALCOHOL80/20 級規範如附件(七), MCC 之 ALCOHOL70/30 級規範如附件(八), 新和規範如附件(九)

伍、結論

1. 客戶預期明年 NP 供應量將過剩, 美國 EXXON 之 NP 又銷售到亞洲造成客戶買氣觀望、出價低, 價格協商困難, 客戶希望一半數量每季以 SPOT 洽購, 一半數量簽長期合約, SPOT 價格不依公式計價, 由買賣雙方出價、還價, 如達到共識即完成交易, 否則各自尋找對象再洽商, 至於長期合約買方原則同意 NP=Kerosene MOPS+ α 值, 但 α 值多少才是合理還在努力當中, 行銷部門對於銷售瓶頸, 採取下列策略:

- (1) 密切與客戶聯繫，增進客戶關係
 - (2) 蒐集市場資訊，了解市場通路
 - (3) 以試銷方式與客戶先簽合約
 - (4) 直接賣給終端使用者
 - (5) 與大林廠合作，互相交換資訊，掌握產品成本。
2. 客戶因為生產 LAB 成本考慮，希望分子量在 163~168 之間，顏色必須透明清澈(SAYBOLT=30 min.)，另 Carbon Distribution 也是重要規範，大林廠因為工廠尚未試車操作，UOP 又以簡單之規範為設計驗收之依據，大林廠對於 NP 生產品質持保守態度，大林廠希望初以 UOP 規範當試銷之規範，但客戶不接受，希望大林廠研究處理，以確保成品品質。
3. 銷售談判已進入緊鑼密鼓之階段，請大林廠提出生產計畫，包括產品規範,停爐計畫，供應時程，行銷部門將依大林廠之規劃來行銷。



**CHINESE PETROLEUM
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Spot Contract for FOB Normal Paraffin Sales and Purchase

Reference No. _____

To Buyer :

This Contract confirms our agreement to sell you the following described goods on the terms and provisions herein set forth:

Part I. Special Terms

1. Quality : As per Seller Normal Paraffin Specifications attached hereto as Appendix I
2. Quantity : Twenty thousand (20,000) metric tons with +/- 5% at Seller ' s option
3. Price : FOB Kaohsiung kerosene MOPS + __ US Dollar per metric ton,

Where Kerosene MOPS is the average price of kerosene, expressed in US Dollar and stipulated in Singapore Platts for the previous month before B/L dates

4. Delivery Date:
5. Destination :
6. Payment due : by T/T by the seventh (7th) day before B/L date to
(Bank Account Info.)

8. Remarks :

(1) The additional terms in Part II General Terms and Conditions thereof are part of this Contract as effectively as though they preceded the signatures of the parties to the extent not contrary or inconsistent with Part I stated herein.

Accepted by Your faithfully,

(Buyer)

Executive Manager

Chinese Petroleum Corporation

Solvent & Chemical Business Division

Please Sign And Fax Back To Us For Our File

Part II. General Terms and Conditions

- 1. Quality.** The goods to be sold and delivered under this Contract shall be specially made for the use of Linear Alkyl Benzene ("LAB") and shall meet the specifications as set forth in the Appendix I Normal Paraffin Specification as attached hereto. In the event the quality of the goods to be sold and delivered is off-specification but falls into the range reasonably accepted to the market, the parties agree to meet and negotiate and extend their best endeavor to reach an amicable settlement in good faith.
- 2. Quantity.** Subject to the terms and conditions stated herein, Seller agrees to sell and deliver, and Buyer agrees to purchase, receive and pay for the quantity as agreed in this Contract.
- 3. Inspection.** To assure the satisfaction to the quality and quantity, the parties shall appoint an international independent surveyor mutually agreed upon and have it issue inspection certificate on each shipment at delivery of Seller's shore tank. The parties shall treat the quantity and quality of the goods described in such inspection certificate as final and binding. The cost of inspection so incurred shall be equally borne by the parties. The sample shall be sealed and maintained at Seller's place for three (3) months. Seller and Buyer further agree the original inspection record extended by Seller for the quality and quantity of goods shall be final, unless a protest raised by Buyer with respect to the quality and quantity of any disputed shipment where such sample shall be final. Any protest or disagreement by Buyer with respect to the quality and quantity of the goods shall be raised in writing in three (3) months after delivery, and any failure or non-performance of this clause shall constitute a waiver and be deemed as Buyer's acceptance and concurrence in quality and quantity

of the goods under this Contract.

4. **Payment.** Buyer or its agent shall make payment for each order by Telegraphic Transfer (T/T) by the seventh (7th) day before B/L date (B/L date inclusive). If the 7th day falls on bank holiday in the place such payment is to be made, the immediately following working day will be the date of payment. Buyer or its agent shall pay the prevailing interest if the payment is made after the due date specified hereinbefore. If any payment hereunder remains unpaid after its due date, the interest on the outstanding amount shall be accrued and calculated at a rate equal to four percentage (4%) over LIBOR 3 month average as quoted on the due date per annum.
5. **Shipment.** Buyer shall declare the intended discharging port with vessel's nomination and documentation instructions at least ten fifteen (15) days (or otherwise agreed between Seller and Buyer) before loading. Buyer shall nominate seven (7) days loading date range at least fourteen (14) days before the estimated loading date range and shall narrow down the mutually agreed seven (7) days loading date range to 5 (five) days range latest ten (10) days prior to the first day of seven (7) days loading date range for laytime calculation purposes and demurrage calculation purposes. The nominated seven (7) days and five (5) days loading date ranges shall not be changed without Seller's written approval. Laytime for each shipment allowed at loading port shall be twenty (20) running hours for lifting of fifteen thousand (15,000) metric tons and calculated in accordance with ASBAII. Laytime shall commence six (6) hours after NOR tendered or vessel all fast, whichever occurs first, and shall cease upon hose disconnection. If the vessel arrives before the narrowed five (5) days loading date range, laytime shall commence at 0600 hours local time of the first day of the narrowed five (5) days loading date range, or

commencement of loading whichever occurs first. If the vessel arrives after the narrowed five (5) days loading date range, laytime shall begin upon commencement of loading.

6. **Warranty.** Seller warrants that the goods shall meet the specifications described herein. THE FOREGOING WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF THE FITNESS FOR A PARTICULAR PURPOSE.
7. **Taxes.** In addition to the purchase price, Buyer shall pay Seller the amount of all governmental taxes, excises and/or other charges (except taxes on or measured by net income) that Seller may be required to pay with respect to the production, sale or transportation of any goods delivered hereunder, unless otherwise provided for herein.
8. **Remedies.** Seller shall indemnify and hold Buyer or its agent harmless from any liability, damage, loss, or expense from any claim or suit brought against Buyer or its agent resulting from the defect of Product except in the case where such claim or suit is caused by negligence or willful misconduct of Buyer. Buyer shall indemnify and hold Seller or its agent harmless from any liability, damage, loss, or expense from any claim or suit brought against Seller or its agent resulting from the negligence or willful misconduct of Buyer. Buyer's exclusive remedy and Seller's limit of liability for any and all losses or damages resulting from defective goods or from any other cause shall be for the purchase price of the particular delivery with respect to which losses or damages are claimed. In no event shall either party be liable for special, indirect or consequential damages, whether or not caused by or resulting from the negligence of such

party.

9. **Force Majeure.** Except with respect to matured obligations for the payment to money due, neither party shall be liable for its failure to perform hereunder due to any contingency beyond its reasonable control, including acts of God, fires, floods, wars, sabotage, accidents, labor disputes or shortages, governmental laws, ordinances, rules and deregulations, whether valid or invalid (including, but not limited to, priorities, requisitions, allocations, and price adjustment restrictions), inability to obtain material, equipment or transportation, and any other similar or different contingency. The party whose performance is prevented by any such contingency shall have the right to omit during the period of such contingency all or any portion of the quantity deliverable during such period, whereupon the total quantity deliverable under this contract shall be reduced by the quantity so omitted. If, due to any such occurrence, Seller is unable to supply the total demands for any goods specified in this Contract, Seller shall have the right to allocate its available supply among its customers and its departments and divisions in a fair and equitable manner. In no event shall Seller be obligated to purchase from others in order to enable it to deliver the goods to Buyer hereunder.
9. Termination and Cancellation. Seller reserves the right, among other remedies on any or all losses or damages, including but not limited to lawyer fee, court charge and any other expenses incurred by Seller at the time before and during the disputes raised against Seller, either to suspend further deliveries, or to terminate or cancel this Contract
- (1) if Buyer fails to pay for any shipment when due; or
 - (2) if Buyer becomes insolvent or bankrupt; or
 - (3) if Seller deems that its prospect of payment is impaired; or
 - (4) if the whole or substantial part of the business of the party is

transferred to a third party by agreement, or order of court or otherwise: or

(5) if the party fails to perform any of the obligations under this Contract and such failure is not cured within a reasonable time not exceeding sixty **(60) days** after its receiving a written notice requesting a remedy thereof.

10.Observance of Secrecy. Both Seller and Buyer shall keep in due diligence from any third party all important matters as to the business affairs and transactions covered by this Contract. The content of this Contract and any related matters, which are specified as confidential by the disclosing party, shall be considered confidential and shall not be disclosed to any third party (except to affiliated companies, proposed assignees to the extent necessary and subject to obtaining a confidentiality undertaking) except as required by applicable law, court order or rule of any stock exchange. In case of any breach of this confidential obligation, the party defaulted shall be entitled to the remedies of injunction, specific performance or other equitable relief. Such remedy shall be in addition to and not in lieu or limitation of other remedies available to the party at law or in equity.

11.Assignment. Neither this Contract or any rights or obligations hereunder shall be assignable by any party hereto without prior written approval of the other party, and any attempted assignment without the express prior written consent shall be null and void.

12.Severability. If any term, provision, covenant, or condition of this Contract, or the application thereof to any party or circumstance, shall be held to be illegal, invalid or unenforceable (in whole or in part) for any reason, the remaining terms, provisions, and covenants hereof shall continue in full force and effect as if the Contract had been executed with the illegal, invalid or unenforceable portion eliminated, so long as

the Contract as so modified continues to express, without material change, the original intentions of the parties as to the subject matter of this Contract and the deletion of such portion of this Contract will not substantially impair the respective benefit or expectations of the parties of this Contract.

13. Entire Agreement. This instrument contains the entire agreement of the parties with respect to the subject matter hereof and there are no other promises, representations or warranties affecting it. It incorporates and supersedes any previous understanding or Contract, written or oral, express or implied, regarding this subject matter.

14. Applicable Law and Jurisdiction. The validity, interpretation and performance of this contract shall be governed under the laws of the Republic of China ("ROC"), without applying the principles of conflict of laws rules. The contract contains all of the representations and agreements between the parties hereto. Any controversy or claim arising out of or relating to this Contract, or the breach thereof which cannot be settled amicably between parties shall be referred to the Taiwan Taipei District Court.

15. Notice. All notices and other communications required or permitted to be transmitted to any of the parties hereto pursuant to this Contract shall be in English and in writing and shall be delivered by hand, prepaid air courier (in each case against signature of receipt), facsimile, or other electronic or telegraphic transmission. Any notice so given shall be deemed to have been received on the day on which in the normal course it would have been delivered.

16. Other Terms. Except as otherwise set out herein INCOTERMS 2000 edition and any other amendments for C&F/CIF/FOB/Ex Works sales shall govern this Contract. This Contract shall be binding and enure to the benefit of the respective successors and assigns of each of the

parties hereto, but any assignment thereof by either party without the prior written consent of the other party shall be void. No modification of this contract or waiver of the terms or conditions thereof shall be binding unless approved unconditionally in writing by authorized representatives.

附件（一）Appendix I. Normal Paraffin Specification

Item	Final Target Specification	Tentative Specification
Total Sulfur	5wt. ppm max	ASTM D-4045
Color Saybolt	+25 min	ASTM D-156
Bromine Index	20 max	UOP 3041
Aromatics	0.5wt% max	UOP 495
NP distribution wt%		UOP 411
nC9 or lighter	0.5 max	
nC14 or heavier	0.5 max	
Total NP	98.5 min	

CPC 正烷烴產品規範

Property	Value	Test Method
Total Sulfur	5wt. ppm max	ASTM D-4045
Color Saybolt	+25 min	ASTM D-156
Bromine Index	20 max	UOP 3041
Aromatics	0.5 wt% max	UOP 495

Normal paraffins distribution wt%

nC9 or lighter 0.5 max

nC14 or heavier 0.5 max

Total Normal paraffins 98.5 min

附件 (二)

UIC P.T. UNGGUL INDAH CORPORATION

NORMAL PARAFFINS

	Specification	Test Method
1. Normal paraffins wt%	98min	UOP688
2. Aromatics ,wt%	0.5max	UOP495
3. Total sulfur ,wt ppm	5max	UOP727
4. Water content,wt ppm	200 max	ASTM D-1744
5. Bromine No.	0.05max	ASTM D-1159
6. Saybolt Color	30min	ASTM D-156
7. Non-Normals wt%	2max	UOP411
8. Peroxide wt ppm	0.2max	ASTM D-1563
9. Average mol Weight	162~168	UOP673
10. Carbon Distribution		UOP 411
C9 and lighter	0.5max	
C10	16max	
C11	Balance	
C12	25min	
C13	15min	
C14 and heavier	0.5max	

附件（三）

和桐 NP 規範

Specification :

<u>Items</u>	<u>Units</u>	<u>Test Method</u>	<u>Guaranteed</u>
Appearance			Clear Liquid
Color Saybolt			+30 Min
Bromine Index	MG/100G	ASTM D-1491	20 Max
Sulfur	PPM	UOP 727	5 Max
Aromatic	WT%	UOP 495-75	0.25 Max
Purity	WT%		98.5 Min
Carbon Distribution	WT%	Gas Chromatography	
C9 and lighter			0.5 Max
C10			3-13
C11			24-34
C12			37-47
C13			19-29
C14 and heavier			0.5 Max
Mol. Weight			164-168

附件 (四)

印度 TPL 公司 NP 規範

92.07.24

S No	Product Characteristic	Unit	Test Method	Specification	大林廠規範		經過協商 GPC 同意之規範	
1	Purity	wt%		99	98.5	min	98.5	min
2	Carbob Distribution	wt%	Gas Chromotoraphy					
	C9or Lighter				0.5	max		
	<C10			0.5	--		0.5	max
	C10			10	--		10	max
	C11			35-45	--		35-45	max
	C12			35-47	--		35-47	max
	C13			20	--		20	min
	C14& above			0.5	0.5	max	0.5	max
3	Average Molecular wt			To meet above distribution	--		report	
4	Carbonyls	Mg/Liter	UOP-624-74	8	--		report	
5	Steam Jet Gum	Mg/100ml	ASTM-D381	2	--		report	
6	Bromine Index		ASTM-D1491	20	20	max	20	max
7	Sulphur	Wt ppm	UOP-727	5	5	max	5	max
8	Aromatics	Wt%	UOP-495-75	0.2	0.5	max	0.2	max
9	Water	Wt ppm	ASTM-D-1744	100	--		report	
10	Basic Nitrogen	Wt ppm	ASTM-D-4629	1	--		report	
11	Chlorides	Wt ppm	UOP-779	1	--		report	
12	peroxide Number	G Eqvt	ASTM-D-2340-82	0.2	--		report	
13	Color Saybolt		ASTM-D-156		25	min	--	

1. 溶劑部於 92/07/23,24 於台北辦公室與 GPC Mr.Muthu 討論 NP 之購買規範
 2. 初步 GPC 希望依協商之規範
 3. 但溶劑部表示須與大林廠再協商,一切之最後確定規範需由大林廠及 GPC 同意
- 附件 (五)

NP Specification for LAB GRADE 日本三菱化學

Product Normal : Normal paraffin C10-C11

<u>Test Items</u>	<u>Unit</u>	<u>Specification</u>	<u>Test Method</u>
Appearance	-	Clear & Bright	JIS K 8001
Water Content	ppm	100 max	JIS K 0068
Color (Hazen)	-	10 max	JIS K 0071
Bromine Index	mg/100g	20 max	JIS K 2605
Sulfur(s)	ppm	5.0 max	JIS K 2451
Chlorine(CL)	ppm	1 max	MCC Method
Aromatics	%	0.2 max	MCC Method
Total N-Paraffins	%	98.5 min	MCC Method
Ave.Molecular Weightg/mol		166.0-168.0	MCC Method
Carbon Distribution	%		MCC Method
		(Gas Chromatograph method)	
C9-		0.5 max	
C10		5.0-8.0	
C11		32.5-36.5	
C10+C11		38.5-49.5	
C12		30.5-34.5	
C13		25.0-29.0	
C14+		0.3 max.	

附件 (六)

NP Specification for ALC(80 : 20) 日本三菱化學

Product Name : Normal paraffin C11-C14(LvsH : 8vs2)

<u>Test Items</u>	<u>Unit</u>	<u>Specification</u>	<u>Test Method</u>
Appearance	-	Clear & Bright	JIS K 8001
Water Content	ppm	100 max	JIS K 0068
Color (Hazen)	-	10 max	JIS K 0071
Bromine Index	mg/100g	20 max	JIS K 2605
Sulfur(s)	ppm	5.0 max	JIS K 2451
Chlorine(Cl)	ppm	1 max	MCC Method
Aromatics	%	0.2 max	MCC Method
Total N-Paraffins	%	98.5 min	MCC Method
Carbon Distribution	%		MCC Method
		(Gas Chromatograph method)	
C10-		1.0 max	
C11		29.0-35.0	
C12		45.0-51.0	
C13		9.0-15.0	
C14		5.0-11.0	
C15+		0.5 max	
C11+C12		77.0-83.0	
C12+C13		17.0-23.0	
C11/(C11+C12)		0.40 \pm 0.05	
C12/(C11+C12)		0.60 \pm 0.05	
C13/(C13+C14)		0.60 \pm 0.05	
C14/(C13+C14)		0.40 \pm 0.05	

附件 (七)

NP Specification for ALC(70 : 30) 日本三菱化學

Product Normal : Normal paraffin C11-C14(L vs H : 7vs3)

<u>Test Items</u>	<u>Unit</u>	<u>Specification</u>	<u>Test</u>
<u>Method</u>			
Appearance	-	Clear &Bright	JIS K 8001
Water Content	ppm	100 max	JIS K 0068
Color (Hazen)	-	10 max	JIS K 0071
Bromine Index	mg/100g	20 max	JIS K 2605
Sulfur(s)	ppm	5.0 max	JIS K 2451
Chlorine(Cl)	ppm	1 max	MCC Method
Aromatics	%	0.2 max	MCC Method
Total N-Paraffins	%	98.5 min	MCC Method
Carbon Distribution	%		MCC Method
		(Gas Chromatograph method)	
C10-		1.0 max	
C11		25.0-31.0	
C12		39.0-45.0	
C13		15.0-21.0	
C14		9.0-15.0	
C15+		0.5 max	
C11+C12		67.0-73.0	
C12+C13		27.0-33.0	
C11/(C11+C12)		0.40 \pm 0.05	
C12/(C11+C12)		0.60 \pm 0.05	
C13/(C13+C14)		0.60 \pm 0.05	
C14/(C13+C14)		0.40 \pm 0.05	

附件 (八)

新和化學公司 NP 規範

Specification :

<u>Items</u>	<u>Units</u>	<u>Spec</u>
Appearance		Clear&White
Color	Saybolt	+30 min
Sp.gr	15/4°C	0.765-0.775
Bromine Index	Br2 mg/100g	10 max
Sulfur	Wt ppm	2 max
Flash Point	°C	110 min
Aromatic	ppm	500 max
Iron as Fe	mg/kg	0.1 max
Purity (Total N-paraffin)	wt%	98.2 min
Carbon Distribution	wt%	
<C ₁₃		1.0 max
C ₁₄ - C ₁₇		97.0 min
>C ₁₇		2.0 max
Ave carbon no14.2-15.2		

附件 (九)

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