2016年1月27日

上午10時02分恢復聆訊

出席人士： 石永泰資深大律師、許偉強大律師及鄭欣琪大律師，為外聘律師，代表食水含鉛超標調查委員會

周慧珠大律師，由銘德律師事務所延聘，代表建造業議會

聶心平大律師，由高露雲律師行延聘，代表職業訓練局

王鳴峰資深大律師、陳樂信大律師及羅頌明大律師，由律政司延聘，代表水務署署長

Mr. Ian Pennicott資深大律師及林定韻大律師，由孖士打律師行延聘，代表中國建築工程（香港）有限公司

殷志明大律師，由羅夏信律師事務所延聘，代表香港房屋委員會

李頌然大律師，由顧增海律師行延聘，代表有利建築有限公司、明合有限公司及伍克明

許佐賓大律師，由的近律師行延聘，代表保華建築營造有限公司

孖士打律師行陳宇文律師，代表瑞安承建有限公司

主席：繼續。

石先生：係。

建造業議會第二證人：李祥安（建造業議會測試監督）宣誓繼續作供
石先生繼續盤問

問：早晨，李先生，我就有幾個問題係想同你跟進。尋日我哋問你問題嘅時候，你咪問過你，你記唔記得就係視乎嗰個師傅或者工人嘅手勢，有時嗰啲焊料喺燒嘅時候，係會即係有過量或者有好多嘅焊料係就會

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唧咗入去嗰個銅喉同埋嗰個曲中間嗰個位嗰度，...

答：係，明白。

問：...你聽過我尋日咁樣問過喇？

答：係，記得。

問：你就講過，就係話「啊，如果做得好就應該唔會嘅。」或者你就曾經講過，就係話你如果你有好多啲技術係可以防止呢樣咁樣嘅事情嘅，譬如話你尋日都講過就係喺將嗰個曲套落去嗰個銅喉之前，你喺個銅喉上面已經落咗一浸錫，咁先至擺落去，就你喺外面落嘅焊料唔使好多添，你都尋日咁講過，你記得嘛？

答：記得。

問：好。我想知道就係呢啲你哋喺教嘅時候，即係呢啲手勢嘅嘢有冇同啲同學講？

答：有，我哋要親身示範，每一次都。

問：示範埋，咁...

答：講解完之後，所有嘅步驟呀，之後仲要示範畀學員睇。學員睇完示範之後，佢有唔明，佢亦都係會即時問。如果冇問題嗰時間，我哋就會喺工場即刻分派材料畀佢哋去實習。

問：咁呢個係教嘅時候，但係去到最後，考核嘅時候。考核嘅時候，你哋有冇真係其中一個評分嘅標準，就係真係睇埋個手勢，定係好務實嘅，即係考核嘅時候就係睇下佢焊完之後漏唔漏水就得咁呢？

答：漏水係一個主要個 point，評分嗰陣時，如果佢做嗰個習作。我哋個流程裏面都會留意佢哋，但係就冇評到個分落去嘅。咁就因為個實習嗰陣時，佢做完個習作，無論佢係漏水、唔漏水，佢都--個過程裏面，佢唔係因為要攞牌，所以係個實習個過程嘅一部分，即係話如果佢做到漏水，我哋可能叫佢重新再做過。如果個過程見到佢係個手勢有唔啱嘅，會即刻糾正佢，因為個師傅喺側邊睇住佢哋實習。

問：但係佢到到後來佢要畢業，咁佢都要考個試？

答：唔使嘅。

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問：唔使考試嘅？

答：我哋嗰個年代係未有嗰個--唔係，點講呢？我喺入咗做師傅嗰陣時就有，即係我講我學師個年代就冇。

問：係。咁但係而家，即係...

答：係，而家嗰啲師傅...

問：...你教到2011年，...

答：係，冇錯。

問：...你就再--兩年前嘅，係咪呀？就再加入番，就係做負責考核嗰部分？

答：冇錯，啱。

問：你教就教到2012年，即係我唔係講你學師嗰陣時喎，我係講你一路教，教到2012年嘅時候，同埋你而家最新你係負責考核，咁你可以同我哋講到，就話考核有㗎嘛，有考試㗎嘛，而家？

答：考試有嘅，嗄。

問：考試嘅時候，會唔會考埋譬如話有實習試？我唔係講緊平時...

答：係，即係而家...

問：...上緊堂嗰陣時嗰啲即係一路觀察嗰啲喎，我係講最後考試嘅。

答：我明，你講緊係考緊中工牌，或者大工牌個試？

問：係，冇錯，冇錯。

答：有嘅，師傅係會不斷係行嗰個工場，去留意嗰啲考生有冇個手勢、步驟有冇做錯。咁個流程係有分嘅，嗰個就有分，就會影響到佢嗰個分數嘅會，...

問：唔。即係...

答：...同埋有--我哋而家現場水喉嗰個測試場亦都有錄影機添嘅，裝咗，成個流程係可以睇晒。

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問：好。但係其中一樣觀察嘅，會唔會係仔細去睇下佢會唔會唧咗好多嘢入去嗰個接口嗰度？會唔會睇到咁仔細，定係純粹係外面睇所謂手勢好唔好？

答：最緊要睇嗰個步驟，個步驟有冇做錯。至於佢落幾多落去，我哋有時唔係--因為一個監考員對十個考生，唔係一對一咁樣睇住佢成個流程，咁我哋係睇唔到佢入面有幾多焊料喺入面嘅。

問：因為我哋之前就曾經去過即係政府嗰個化驗所，就曾經見過一啲嘅樣本，即係出咗事嘅喉嘅樣本，即係打開咗嚟睇，見到一啲即係似乎就係真係唧咗好多嘅焊料入咗去入面，因為積咗好多喺入面。即係呢啲嘢你唔劃開嚟睇，你唔知㗎嘛，你純粹睇外面嘅手勢咁樣唧，但係你唔知原來重咗手，或者原來用咗好多嘅時間，所以有好多嘅焊料滲咗入去。呢樣嘢考核嘅時候，你哋冇一樣嘢係所謂劃開嚟睇下入面會唔會好多浪費，冇嘅？

答：到而家呢一刻，考試角度都唔會劃開嗰個考生嘅所有喉管，睇下入面有幾多焊料喺度存在，冇呢個扣分嘅機制。

問：好。即係外面睇下手勢好唔好，叫做會係？

答：係嘞，冇錯。

問：但係另外一度跟進嘅，就係我哋有聽過，亦都係有啲師傅講，就話如果係用含鉛嗰隻焊料，佢哋叫錫條，你就話其實冇一個約定俗成嘅叫法。但係含鉛嘅焊料就熔點比較低，就比較快熔，比較快容易即係熔咗佢要嚟焊接。但係有唔好處，就係熔得快就好容易一大吓咁樣熔咗入去，就會有浪費嘅情況出現。

答：你係講喺測試嘅途中？

問：唔係，直情係燒焊嘅時候。

答：唔係，你講喺工場裏面啲工人個做法，定係話講緊喺...

問：佢哋講就係呢--我同你講講嗰個情況，就係其中有一點之前都我哋考慮過嘅，就係點解會有人選擇去用含鉛嘅焊料，有啲人就用唔含鉛，有可能就係真係大家所謂認知不足，即係或者落單嘅時候，即係求其嗰咗啲嘢，人哋就送咗啲嘢嚟，唔知頭唔知路就用咗，呢個一個可能喇。

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答：明白。

問：另外一個可能，就係我哋亦都考慮過會唔會係有經濟嘅考慮，就係因為我哋亦都係知道市場上就好似話同樣咁多嘅焊料，含鉛嘅就平啲，唔含鉛就貴啲。呢一個點一提出嚟，就有好多業內嗰啲即係師傅或者老闆，佢就答番就話，就第一，慳都唔係慳咗咁多；第二，佢哋就話最重要嘅就係未必有得慳嘅，佢哋話點解呢，就係如果用一啲含鉛嘅焊料，就第一，就係因為係一支支。唔含鉛嗰啲呢，即係我哋一路嘅認知就係一卷卷呢啲嘅，佢哋嘅說法就係你聽清楚，佢話有兩個原因，起碼兩個原因點解未必慳到。

第一個，就係如果你用一卷卷呢啲，你隨身帶住一卷嘢，你去到要焊幾多就攞出嚟焊，焊完之後卷咗，剩番嗰橛就 keep 番喺呢卷嘢度，就走去繼續燒下一橛。但係如果你事先切定一條條嘅焊料，佢就話嗰啲係含鉛嘅，因為佢哋話含鉛就係咁樣一條條切定。你用含鉛嗰啲焊料，你攞住一條走去燒一條管，你燒剩最屘少少，啲師傅就唔會同你 keep 番要嚟做下一條，就抌咗佢算，呢個係第一種可能會浪費嘅情況。

答：係。

問：第二種可能嘞，第二種可能浪費嘅情況，就係由於含鉛嗰停焊料個熔點比較低，好容易就熔，所以你落少少熱力就焫落去，佢就好快變成咗液體狀，佢就會成叭咁樣滲咗入去個喉管裏面不特只，可能有時候滲到直情熔到滴咗落地下，所以呢一類嘅虛耗就會多過用不含鉛嘅焊料嘅。所以佢哋就話，計實條數其實係冇得慳嘅，可能仲用多咗添。

咁我一連串講咗嗰啲師傅或者老闆講嘅嘢，你有啲咩嘢評--評價呢，對佢哋講嘅嘢？

答：係，石大狀。首先，我回答你兩個問題之前，我想補充番少少，就係因為頭先先前你一路講緊我哋測試嗰啲嘢，我哋建造業議會。

問：係。

答：咁喺我哋建造業議會，我聲明咗先，就係建造業議會喺測試部分，我哋供應都係畀一啲無鉛錫線畀考生用嘅。

問：係，我明。

答：佢絕對唔會有機會用得到佢帶嚟嘅錫焊料，我哋係唔批准嘅。

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問：係，係，係。

答：至於...

問：呢個就係講你教嗰陣時，但係我係講實際而家...

答：唔係，我唔係教嗰陣時，我係做測試嗰個位置嗰陣時，考核嗰啲考生嗰陣時。

問：測試，我明，我明，我明。但係我頭先同你講緊，就係啲師傅講實際操作嘅時候嘅...

答：咁我回答石大狀個問題。

問：好，好。

答：就同議會無關，以我個人經驗去答呢兩個問題。

問：係，係。

答：就以我做咗咁多年嘅經驗，我覺得第一個問題就係話你要 cut 開一條條錫條，同埋揸住一卷嗰個損耗嘅問題會造成浪費。咁喺我哋出面工場，即係喺工地嚟計，因為我哋涉及到有室內同埋室外嘅接駁水管，如果喺一個室內，咁好多師傅都係揸一卷卷去做嘅，因為佢就算跌咗落地下，都喺個地下嗰度，佢唔會跌咗落街吖嘛，唔會造成一啲人命或者財物嘅損失、傷亡咁樣。

問：停一停先。即係如果喺室內做，就可以攞住一卷卷，因為就算跌都跌落地下嘅啫。

答：係嘞，係嘞。

問：你喺外面搭住個棚喺度燒嘅時候，唔覺意跌咗就成個揸咗落嚟，就可能...

答：係嘞。所以就有部分嘅工友，我哋見到就係話佢一出到外牆做，佢就唔想揸住一卷嘢嘅，因為揸住一卷嘢好容易失手跌咗落街，佢就會 cut 成一段段，大概呎零、兩呎長嘅，就會攞喺佢個架生桶嗰度用。咁用嗰個期間，就摺埋摺埋嘅，要嗰陣時就攤開，揸住一嚿仔嘅啫。當然用到最後屘一節仔，佢唔可能成隻手攞埋落去嘅，佢一定係有少少浪費嘅，呢一個就係我哋喺出面工地時常見到嘅啲師傅嘅習慣。

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問：好，停一停先。呢一個就係講緊一卷卷同埋一條條喺虛耗上嘅分別。

答：係，係嘞。

問：咁你所講，就係話就算一條條都係不含鉛嘅變做一條條，所以呢度嘅焦點唔係在於含鉛定唔含鉛，...

答：我哋--係嘞，冇錯。

問：...呢度嘅焦點係在於一卷卷定一條條？

答：冇錯，石大狀，你講得好啱，係。

問：得，好，下一點，繼續。

答：第二點，就係話--睇下先吓，你頭先問嘅就係話...

問：熔得快，即係好快一叭咁樣虛耗，係。

答：熔得快，係，師傅熔得快就走入去個配件或者喉管入面。

問：或者滴咗落地，好多虛耗喇。

答：係。呢個就涉及嗰個--琴日我所講係個技術上同埋信心上嘅問題，如果個師傅係夠技術嘅，佢亦都燒咗好耐嘅，佢亦都唔會專登推好多錫落去嗰個位度，佢都--個技術如果佢 get 到嗰個位已經係完成晒，佢亦都有信心呢個位係能夠唔漏水，佢當然唔會繼續燒。你都會見到我個示範嗰段片嗰度，一夠熱，一現到嗰個銀色線之後，個火就要離開現場，如果繼續加落去，佢感覺唔到個溫度係繼續熔，啲錫你繼續放落去咪繼續熔囉。繼續熔得兩個可能性，我琴日都講咗，一係就係流出配件以外，滴咗落地下；第二個可能性就係流咗喺喉管個入面，配件或者喉管入面，造成一個堆積喺入面。

問：係。

答：係。

問：咁所以其實都係視乎手勢，如果嗰個人冇信心，或者即係唔係叫做技術比較高超啲嗰拃師傅都有呢個可能嘅，...

答：有咁嘅可能，係。

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問：...如果係用咗即係所謂熔點較低嘅...

答：就唔視乎嗰個熔點低唔低嗰個錫條問題其實，...

問：唔視乎，okay，得。

答：...係喺個技術上佢有冇信心去做嗰道喉。

問：得，我明，得。另外一點我想同你跟進嘅，就係你一路講，就係你閣下教嘅時候會點樣去同啲學員去強調「呢一種就係含鉛嘅；呢一種就唔含鉛嘅。嗱，你哋記住食水就要買啲不含鉛㗎，或者做--用啲不含鉛㗎。」你閣下就係咁樣去教喇，但係建造業議會有冇即係任何嘅我哋叫做 briefing，或者係一啲即係教學嘅指引，或者即係一定要--即係各大教書嘅老師一定要同啲學生強調邊幾點嘅呢？因為我哋睇過 syllabus 我哋見到，syllabus 就一路盤古初開都冇強調含鉛嘅，所以我嘅疑問就係係咁啱你即係有心同啲學員咁講，其他嘅老師而家凡事係睇指引，syllabus 冇寫，咁佢真係撞啱嗰個老師本身會唔會講個咋喎，同唔同意？

答：在我所見，因為我自己喺上水教咗十幾年，我哋個工場裏面都有四位導師嘅，我哋最高峰嘅時間開四組水喉班，基本班。因為我琴日都講，我哋個工場裏面係一個大嘅形式，好多張檯，咁嗰時間每一個師傅教嘅嘢，其實係隔籬嗰組都會睇到嘅，都會聽到嘅，有時。咁就...

主席：即係你四個導師會同一個工場喺度教？

答：係。

主席：唔。

答：同一個工場教。咁嗰時間就--當然大家唔一定係同一時間教焊接呢個步驟，我哋因應個--嗰個工具、材料嘅運用、使用，可能今日佢係教膠喉；第二個師傅教銅喉焊接；第三個可能就係教緊 ductile 喉都唔定嘅。咁到到調番轉頭嗰個時間，大家轉一轉身嗰個時間，第二個師傅教銅喉嗰個呢，其他師傅其實都有可能性經過個工場，或者聽到佢講，咁都會有可能性。我就喺上水，我都聽到有同事咁做，即係同我哋個講法一樣。

問：係，但係呢--得，我明，但係呢個純粹即係機緣巧合咁啱係聽到，但

係機制上就冇話上面有個旨意落嚟，就話「嗱，一定要教呢樣嘢。」咁就冇嘅？

答：冇嘅。

問：冇？

答：嗄。

問：即係你個人有咁嘅認知就咁講，或者就係咁啱可能係一組人上緊堂嘅時候，另外一組人喺左近，佢哋嘅學員或者導師咁啱就聽到，就係咁樣？

答：係，係。

問：你係咪有講過話你有問過其他嘅一啲導師佢哋都係咁樣教，定係...

答：我就--因為早前我哋主席都曾經過過九龍灣睇過一個師傅示範，當其時我都冇出任何聲嘅，我喺側邊，佢都係一樣咁樣講。

問：「早前」嘅意思係咩嘢？

答：早前嘅，即係鉛水事件發生，我哋建造業議會主席都好想了解下究竟個步驟、個程序係點樣做咁樣，咁嗰個時間就去九龍灣睇一個師傅示範，咁個師傅都做咗好多年，我事前冇喺側邊講過任何嘢嘅，咁我一路睇佢個步驟、個程序，佢都係有做呢個動作，即係講「呢啲係有鉛，呢啲係無鉛」咁樣。同埋做個動作都係同我類似嘅，嗰個示範裏面。

問：但係呢個係事發之後喇？

答：係嘞，係嘞，事發之後，係。

問：就我再跟進呢個關於教嗰個問題，即係如果頭先你所講，就係冇一個既定話一定要指明或者書面，或者即係制度上係話一定要強調呢樣嘢。就係頭先你講，就係視乎你，或者視乎咁啱嗰輪，或者嗰個 area，嗰個工場裏面嗰啲師傅咁啱係咪聽到。即係老師，對唔住。但係即係未必個個都係你咁樣有心人，同埋即係啲老師戚出咁轉，咁係冇一個系統去確保即係關於選料用唔用含鉛或者唔含鉛呢樣嘢，確保每一個老師都教畀學員，同埋你同唔同意？

答：我哋喺議會嚟計呢，佢買料，佢係一個採購部去訂，咁佢訂如果包焊料返嚟嗰時間，係由嗰個主任--我哋嗰陣時叫高級導師，統籌晒訂幾

多之後，就分發晒每一個組嘅師傅。其實每一組師傅用喺焊接方面，都係會用係同一隻材料，...

問：我明，佢用嗰...

答：...唔會話呢個師傅同第二個師傅唔同囉。

問：我明，佢接嗰隻料一定係無鉛嘅。但係我嘅意思係有冇一個制度去確保，就係話唔好視乎某個師傅佢本身有冇心，或者佢點，總之個個師傅都確保佢可以教嘅時候強調要用無鉛呢一點，有冇呢樣嘢？

答：冇。

問：冇？

答：當年係冇嘅。

問：當年冇嘅，好。我想問一問，就係我哋而家一路講緊，就係做銅管咁用錫料，我哋而家知道就係話原來錫料、錫焊裏面都有分有鉛、無鉛，所以就而家好多時候，就尤其是事情發生之後，咁啲指引就講到明，就話錫焊一定要指明係無鉛嘅。

答：係。

問：你亦都講，就其實之前都有講，「錫料一定要有兩種，不過你哋做食水就用無鉛喇。」我哋唔好忽略就係其實焊料都有銀焊呢樣嘢，銀焊枝，你哋教都有教用銀焊枝？

答：有。

問：有。咁可能係即係視乎老闆要用邊樣，因為好多時候就，即係技術上會...

答：你講喺...

問：唔係，技術上你會教埋佢點樣做喇？

答：會。

問：係。好多時候，實際上，邊一啲管用銀焊枝，尋日都講過，就係視乎嗰個 contractor 可能佢係咪想落重本，佢咪全部都用銀焊枝。

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答：冇錯。

問：但係銀焊枝嘅化學成分，其實都潛在地有個風險都會有鉛㗎，你知唔知？

答：唔清楚呢樣嘢。

問：唔清楚嘅？

答：我唔了解嘅，係。

問：即係所以其實你哋教嘅時候，叫啲學生用焊料要用不含鉛，你係教佢哋用錫焊嘅時候先強調呢點嘅啫，係咪呀？

答：係。

問：Okay。

答：因為錫焊裏面有兩種即係錫嘅料走出嚟，因為喺我哋中心見到就係有兩種，一種就係我哋講嘅錫條，即係 40/60 個比例嗰隻；一隻就係卷裝嘅一個無鉛錫線。所以我哋刻意會見到呢兩隻物料，我哋會帶出去畀個學生認知。

問：係，okay。

答：但係去到銀焊枝嘅教學嗰面，就冇第二隻銀焊枝嘅，得一隻。

問：Okay。但係因為我哋嘅認知，就係認為銀焊枝好多時候，裏面都會有一啲嘅品種係含鉛，但係你哋教嘅時候，就唔會特別向學生強調「嗱，用銀焊都係呀，你哋小心唔好買咗啲含鉛㗎。」有冇講過？

答：我哋冇講。

問：冇。另外就係銀焊枝亦都有一啲品種裏面係含有一種嘅金屬叫cadmium，我唔知中文叫咩嘢，鎘。Cadmium 中文係--查緊。你哋教銀焊枝，總之有冇叫啲同學要即係確保用一種係冇某幾種重金屬嘅即係銀焊枝？

答：冇㗎，因為如果教銀焊，我哋...

問：即係因為學你話齋，銀焊枝得一種，你...

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答：...得一種焊枝返嚟，咁樣就所以我哋就係照教嘅啫，我哋亦都未--即係嗰陣時教學個期間都未聽過銀焊枝入面有含鉛嘅成分，或者含嗰啲鎘呀之類嗰啲嘢，...

問：其他金屬？

答：...唔知嘅。

問：唔知嘅？

答：係。

問：Okay。所以特別強調用嘅焊料不可以含某種金屬，就係純粹係講錫焊料嘅時候就先至有提出呢一點嘅啫？

答：係。

問：嗰個字係讀個「鎘」字㗎。但係總之你冇--銀焊枝係冇講到呢一類咁樣嘅嘢？

答：冇嘅。

問：冇。之前，另外有個師傅就係同我哋講過，就係話又係嘞，即係燒啲熔點比較低嘅錫嘅焊料，即係含鉛佢哋話係，就係喺大風嘅位置就燒啲含鉛嘅焊料就容易啲，因為熔點低啲，咁就即係如果大風，就冇易吹--即係如果你大風，你要 keep 住嗰個槍走去燒嘢，就用啲熔點低啲嘅物料就方便啲，你有冇聽過呢個說法？

答：呢個答你嘅問題呢，就唔代表議會，代表我個人嘅經驗。

問：係，係，係。

答：我個人嘅經驗就唔啱嘅，呢樣講法。

問：唔啱？

答：因為涉及佢大唔大風，係涉及嗰支石油氣燈，佢噴出嚟入面嘅液態石油氣變做氣態嗰期間，佢混和咗空氣，喺嗰支槍咀後面有個位置走空氣入去，然後混和咗先能夠製造燃燒。咁如果你大風，就唔關嗰啲焊料事，係你嗰支燈會唔會熄嘅問題，如果你係大風吹到你啲氧係入唔到去嗰支燈咀，而令到佢產生唔到燃燒，你就算用乜嘢焊料落去，佢都係熄嘅，支燈，咁就製造唔到呢個動作，同個焊料係無關。

問：唔。好嘞，最後，我就有一個問題，就係我哋嘅理解吓，就係關於大工、中工嗰方面嘅考核或者提供課程，就 CIC 負責嘅，其中一樣--即係其中一個即係負責嘅一個機構，就 CIC。

答：據我所知呢，大工、中工淨係 CIC 先有提供呢個即係話可以發到個牌出嚟，...

問：唔，得。

答：...即係就係技術證明嗰個證明書。

問：係，得。唔係，其中一個可以成為大工嘅途徑，就係做咗 licensed plumber，嗰個咪唔牽涉 CIC 囉，肯定。

答：係，冇錯，啱。但係都係要嚟 CIC 度攞番個牌嘅，因為要申請豁免。

問：係，我明，我明，我明。但係即係我不如講得直接啲，提供課程方面。

答：係。

問：提供課程方面，就如果一個學員話「我想做大工」，咁佢哋話嗌我去 CIC，即係而家嚟講，一般大路嘅做法，對嘛？即係大路啲嘅做法。

答：如果你想做一個大工--我唔明，石大狀，因為我哋有幾個途徑嘅，你係咪想話直接佢讀完個課程可以攞到個大工牌？

問：係，冇錯。

答：係。

問：中工或者大工--中工，講中工。

答：到現時為止，冇一個課程讀完係可以直接攞大工嘅。只有頭先石大狀講，你話申請豁...

問：由中工開始， 頭先我話。

答：中工個課程都係嘅，凡係我哋喺建造業議會考嘅牌，無論你之前係讀過咩嘢課程，你都係要再嚟考過個牌嘅--嗰個試嘅。

問：係，係，係。

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答：例如我哋有一個叫做中工技術提升課程，咁佢個報讀嘅資格，就係話當你考完中工，你肥咗佬，唔合格，你先至有嗰個資格去報讀嗰個課程。咁佢分三個單元，呢個三個單元就就着嗰個考生佢邊一方面--即係你考完之後，我哋有個 report 畀嗰個考生，即係話畀你聽，你邊一個弱項到時扣分扣得好多咁樣，考生會因應佢自己嘅技術不足嘅地方去報讀嗰三個單元其中一個、兩個，或者更甚三個讀晒都得。咁佢個資格就係一定要考咗中工肥咗佬先，然後讀得呢個課程之後，讀完，師傅會講解畀佢聽嗰個技術個掌握度喺邊度，同埋個技巧、個步驟係點樣先為之正確，然後最後嘅會畀學員去練習。練習完咗嗰個課程之後，我哋係唔會直接畀中工牌佢，我哋只會畀一張證書，話畀佢聽「你完成咗呢個課程」。好嘞，考生如果認為有信心，讀完個課程，佢會再去報名考嗰個技能測試，中工。考個過程係冇特別掛鉤或者優惠嘅，直到佢真係考到能夠 60 分合格，我哋先至會發出個中工牌，大工如是一樣，係。

問：即係其實課程提供同埋考核，可以籠統地講都係 CIC 嘅範圍嚟嘅？

答：係。

問：好。我哋嘅理解就係 licensed plumber 持牌水喉匠課程嘅提供或者考核就唔係 CIC？

答：唔係，係...

問：VTC？

答：...VTC 嗰面嘅。

問：係嘞。

答：因為首先，licensed plumber 我自己本身都係。

問：係，係。

答：佢首先就係要滿足到就係話你一定要攞到張 VTC 讀嗰個叫做水喉技工課程，嗰三年嘅技工課程，要攞到合格晒，攞到 cert，然後就先至可以報水務署嗰個另外一個課程，都成幾十個鐘嘅，我詳情唔記得咗，好似四十九嘅。如果冇記錯，四十九個鐘個課程。咁個課程裏面有一啲講師會教佢成個流程，就係申請水錶個流程，入啲咩嘢 form，邊個人要簽名，同埋啲法例上嘅嘢、繪圖上嘅嘢，全部教晒之後，就會喺課程完咗之後，就進行一個 licensed plumber 嘅考試。咁演

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化到而家，就要考實務試、筆試咁樣。

問：唔。好嘞，行外人睇，做水喉嘅大工、中工就 CIC；licensed plumber（持牌水喉匠）就 VTC，考試或者提供課程。但係其實大家要學嘅認知嘅嘢係個分別在邊度，同埋大唔大嘅呢，其實？

答：其實有分別嘅。

問：有分別？

答：有分別嘅，其實中--喺技術上，一個工人就以手勢嚟計，...

問：我哋講大工，我哋講大工。

答：係，大工。咁大工都係講嗰個技術上嘅，佢可能真係好話唔好聽，講句「我盲字都唔識隻」嘅，但係我識睇你張圖，我識能夠跟你張圖嘅尺寸、你嘅要求去做到嗰份嘢嘅習作出嚟，而係能夠攞到你 60 分合格嘅，嗰個就係一個--嗰個 skill 就能夠攞到你嗰個大工牌。

問：係。

答：但係相對喺個持牌水喉匠，喺我哋水喉業界嚟計個層次就高咗好多，喺同個大工個比較。所以你會見到 licensed plumber 可以申請豁免攞大工牌，但係唔調得番轉，就係大工牌唔可以話有任何途徑可以直接攞到個 licensed plumber，唔得嘅。

問：係，我明，係。

答：就 licensed plumber 嗰度就係一定要係你攞多幾張 cert，然後讀埋嗰個課程，然後再考佢嗰個試咁樣。咁另外仲有一個途徑嘅，就可能大狀你都會知，就係話如果佢係英國水務學會香港分會嘅會員，佢係可以豁免唔使讀嗰三年嘅技工證書，直接報嗰幾十個鐘嘅程。

問：讀 LP，係咪呀？

答：係嘞，係嘞。

問：但係我知道即係如果你技術上，你睇下唔同嘅途徑，好多五花八門，你要即係好似八陣圖咁樣去睇。但係純粹教嚟講，即係尋日可能主席都曾經即係呢個帶過過呢個問題，就係純粹我哋唔好講話，法例就規定咗 VTC 就係做 LP 嘅，CIC 就係做大工、中工。資源上或者即係教學嘅人手上，即係其實有冇啲咩嘢係 CIC 做唔到嘅呢，如果係要埋

你哋去教，或者提供呢個考核？

答：首先講 licensed plumber 嗰度裏面有兩個課程，一個 craft cert，嗰個技工證書嗰度嗰 3 年。咁喺我哋現有嘅而家議會嚟計個角度，係有足夠人力、物力可以做得到呢樣嘢。但係當然，我哋唔可以立亂做嘅，因為係一個--佢 licensed plumber 規定咗係一定要上 VTC。

問：我知，我知。

答：我哋嘅人手應該係可以做得到入面個教學嘅，包括咗實務佢裏面有。但係去到上嗰幾十個鐘頭個課程裏面，就涉及到有水務署啲幫辦落去教嘅，嗰度呢就可能我哋係未能夠--暫時議會嚟計，未能夠應付到嘅。

問：點解呢？

答：因為佢--我哋要請水務署嗰啲幫辦嚟教，同埋...

問：「請」嘅意思，即係當係畀即係津貼或者盛，佢哋嚟教，嗰種「請」係咪呀？定係點呀？定係佢唔同你合作，定係點？

答：我知道我哋嗰陣時想就係有啲幫辦嚟教。咁我唔知佢嘅--VTC 點樣同佢個關係係義務吖，定係話畀錢，我哋唔知。

問：Okay。就總之 VTC 就係有安排可以啲幫辦去到教？

答：係，係。

問：Okay，okay。

答：同埋 VTC 就佢考嗰時有兩 part，頭先講咗，喺到最後屘，有筆試同埋實務試。實務試都係 VTC 嘅同事去安排考試，咁嗰 part 我哋就能夠做得到嘅，因為佢嗰 part 考嘅試，做嘅技能上嘅嘢係比我哋嘅大工試淺，技能上係淺嘅，但係筆試嗰面就係深過，即係技--深過我哋大工試嘅筆試。

問：係。筆試方面你哋有冇啲資源或者人手去教佢哋？

答：其實...

問：筆試方面，即係理論啲嘅嘢可能係，即係意思。

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答：其實我哋亦都有--都成接近二十個持牌水務匠喺我哋議會工作，其實都應該可以嘅，但係就至於喺請唔請到幫辦過嚟協助教就未知，呢樣。

問：嗰個你覺得係比較主要嗰個障礙，係咪呀？

答：係嘞。

問：好，唔該。

黎先生：我可唔可以問一問，就係做大工、中工唯一途徑，差唔多就係考CIC嘅試？

答：係。

黎先生：一定要考CIC嘅試，就冇其他途徑？

答：係，冇。

黎先生：Okay，唔該。

石先生：唔該晒，我冇其他問題。

主席：唔該。

殷先生：主席。

主席：問喇。

殷先生：我有啲問題係想同證人跟進下，業界係關於對唔同類別嘅焊料嘅認知，佢嘅性能嘅認知同埋潛在嘅風險，我打算就會同大家一齊睇一份文獻嘅。我今早亦都畀咗一份委員會嘅律師，但係就未派畀其他嘅律師，其中一份畀水務局同埋委員會，咁我而家派。

呢一份呢，或者我簡介呢份係咩嘢嚟嘅。呢份係一份係喺美國方面有一個建造業嘅協會嘅文件嚟，佢哋有啲regular嘅conferences，就有啲papers present畀業界。其實佢呢一份嘢，

就係2007年嘅一個conference嗰陣時嘅paper嚟嘅。咁佢入面，其實佢嘅角度就係講嗰啲做屋頂嘅做法，但係就好深入咁有探討焊料嗰方面嘅用法。

<u>殷先生盤問</u>

問：容（譯音）生，係咪呀？

答：小姓李。

問：李生，sorry，李生，我見到你嘅--我係代表房委會。

答：係。

問：你都聽到我頭先講，我係想同你探討下業界對焊料嘅認知。我見到你自己嘅履歷，就你81年就做咗一個Basic Craft Course in Plumbing。到89年嘅時候，你自己亦都做埋呢個Grade I 嘅licensed plumber。

答：係。

問：我可唔可以咁講，你喺本地嘅水喉行業入面都可以稱得上係一位較為資深嘅行內人，我咁講？

答：你可以咁樣稱嘅，係。

問：我想你睇睇呢個X3，琴日石大狀都同你睇過，X3入面嘅2021到2022頁嗰陣時，係有啲關於你哋方面嘅教材。

答：係2023定二零...

問：2122--2021同埋2022。

答：2021，係。

問：你見到上面有講唔同類別嘅水管嘅接駁方式。

答：係。

問：似乎入面講焊條接駁嗰度係冇分開講話有鉛、無鉛嘅類別嘅焊料，你

同唔同意我咁講？

答：文字上冇好清晰寫明，係。

問：而我哋見到你其實入面有講好多唔同嘅接駁方式，譬如呢個抹錫瓜咁樣。

答：係。

問：我嘅理解，抹錫瓜其實係一個幾古老嘅做法，就係熔咗啲焊料，然之後撻上去嗰個駁口嗰度搵嘢去捽嘅，英文叫"white joint"，係咪呀？

答：哦，英文程--英文我唔清楚係咪咁樣叫，嗄。

問：係用...

答：我哋行業上叫「抹錫瓜」。

問：但係佢係撻啲焊料上去，然之後搵布去捽佢，...

答：係。

問：...捽實佢嘅？

答：唔係捽實嘅，其實係當燒嗰時間，石壺因為個松香膏就會黏實咗喺個表面，抹嗰個動作只係話因為如果你太多焊料喺度，你會入唔到個配件，我哋要抹咗佢，等佢唔好大多拱埋一嚿，你就入唔到落個配件，個動作係抹，唔係壓落去嘅，係抹走多餘嘅錫。

問：明白。我理解嘅抹錫瓜嗰個動作，如果係用嗰個方式，一定係用有鉛個焊料個喎，啱唔啱？

答：唔啱。

問：唔啱，okay。但係你睇睇，你有講銅管、鋼管，跟住有鉛管嘅接駁嘅，你睇落去。

主席：有講...

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答：鉛管我哋未接觸過嘅。

問：但係個教材度有提個喎，「鋅鐵管（薄金屬）」對上嗰度，「鋁管」同埋「鋅鐵管」之間。

答：我知道。咁呀你...

問：即係你係咪話畀我聽，你本人根本冇接觸過鉛管？

答：冇接觸過。

問：教材就有寫？

答：教材有寫。

問：或者我問一問，你唔知就唔緊要嘅。你知唔知道其實如果鉛管嘅接駁用焊料，用錫料，佢抹錫又好，抑或走錫好，都係用有鉛嘅焊料嘅，一定？

答：我唔知，我冇接觸過鉛管。

問：好，okay。或者我想你睇睇，今日我就啱啱拎咗一個文件出嚟，你都聽到我講呢個，其實就係唔係本地嘅，可能大家都冇接觸過，就係美國方面有一個建造業嘅協會喺2007年嘅時間開過一啲conference嘅時候嘅一個paper嚟嘅。唔好意思，我問一問--想問一問你，李生，你識唔識英文？

答：我識，但係唔係好流暢，少少喇。

問：唔緊要，或者我用我個方式去轉譯，用中文譯下呢份文件。呢份文件其實就係主要係講鋪屋頂嘅時候，點樣去接駁、焊接嗰啲金屬嘅片。琴日你都有講過話，你都知道譬如响外國，譬如英國，傳統上水喉匠係做埋嗰啲金屬嘅焊接㗎嘛，你確認？

答：係，薄片囉，嗄，你講係，啱。

問：但係佢入面呢度就--我理解啱唔啱呢，首先我問，其實接駁水喉同焊接嘅方式，其實同焊接嗰啲金屬片嗰個技術同理論上係一樣，啱唔啱？

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答：唔同㗎。

主席：唔明，我唔明。

答：唔同㗎。

問：即係大家都係用焊料嘅，啱唔啱？

答：用焊料，係。

問：我想睇睇，就佢其實呢度好幫助到我哋，就係有個解釋，佢就話"Definition"--第一頁，佢第一行嗰--第一--佢三哋嘅，嗰個頁數，嗰個文件入面，佢係每一頁都有三行咁樣。第一行中間嗰度，佢講呢個焊料嘅解釋，咩嘢叫做用焊接個方式。佢話基本上，佢話焊料個方式就係用一個--燒熱一個要焊接嘅金屬去到低於嗰個要被接駁嘅金屬嘅熔點之下嘅溫度，但係就高過啲焊料嘅熔點，而利用嗰啲焊料去接駁嗰個需要接駁嘅金屬嘅，呢個就所謂接駁嘅形式，你同意吖？

答：溫度嗰方面，我哋就冇去專登刻意去度嘅，但係我哋其實議會--我哋先前都有講，我哋係有呢個工具，同埋有教學員係點樣去接駁呢個白鐵嘅鋅鐵皮，...

問：但係你嘅理...

答：...但係就同我哋焊接水喉嗰啲工具係唔同嘅。

問：係。

答：嗄。

問：但係你嘅理解係咪話即係個基本嘅道理就係話要嗰個溫度係去到熔到要被焊接嗰個物件...

答：物料。

問：物料。但係就高過嗰啲焊料嘅熔點？

答：一定要高過熔到嗰啲焊料，但係就唔可能高溫度熔解埋嗰件鋅鐵皮嘅。

問：咁就為之焊接？

答：係。

問：佢就話畀我哋聽，其實有所謂"soft soldering"，就係而家我哋通常講嘅焊接嘅方式，就基本上係用焊料係喺低過攝氏 450 度嘅溫度之下去做呢個焊接個方式嘅。

答：我重申講，我哋唔會去睇佢嗰個溫度，亦都唔會睇個溫度話 450 度，我哋去做嘢，因為我哋教學員嗰時唔會有溫度錶去睇。但係我就--貴姓呀，你係？

問：我姓殷嘅。

答：殷生，你好。就主要頭先你講嗰個鋅鐵皮嘅接駁，同我哋個焊接供水系統嗰個接駁，無論係用個材料、工具、個接駁方式都唔同嘅，其實。

問：好。但係我想同你講講話焊接嗰個技術，因為有講就話所謂--我哋聽過有"sliver brazing"，你明我講乜，銀焊？

答：銀焊，係。

問：其實銀焊基本上同呢個錫焊，嗰個道理係冇分別嘅，不過係溫度高啲嘅啫，你同唔同意？

答：唔同意，個做法應該完全唔同嘅，銀焊唔需要抹個--事前喺條喉度做任何動作，冇嘅，唔使嘅。

問：但係基本上都係靠過用一啲熔--燒到個溫度係熔咗啲焊料，但係就唔係高到熔咗嗰啲要被...

主席：我想問一問你，你問呢啲問題係咪想 justify 房署唔用銀焊呢一樣嘢呢？

殷先生：唔係，主席。

主席：如果唔係嘅話，唔需要問。

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殷先生：我係想即係睇下業界對嗰啲焊料嘅認知嘅啫。

問：或者我再問一問，我 move on。你如果揭去另外一頁，佢開頭嗰度就講呢個無鉛焊接嘅歷史，佢就講話歷史上其實最普遍嘅焊料係鉛同埋錫嘅合金嚟嘅，呢樣嘢你有冇認知嘅呢，你同唔同意？

答：你講喺供水系統上面？

問：唔係淨係單喺供水系統，首先我問係焊料焊接呢個技術，最普遍嘅歷史上面用個焊料係錫同埋鉛嘅合金，呢樣嘢你知唔知？

主席：你講--佢問得啱嘅，焊接，焊接乜嘢？

殷先生：跟住我係都會講水喉。

主席：唔係呀。

殷先生：我首先問係焊接個技術；第二，我...

主席：焊接嘅技術睇下你焊乜乜嘢囉，你焊坦克車梗係唔會用呢啲喇，係咪？

問：咁我問--佢一路講落去，佢就話起碼喺美國 1986 年之前，50/50，即係錫 50 個 per cent，鉛 50 個 per cent 個焊料係愛嚟接駁水喉最普遍嘅用料，呢樣你...

答：我唔清楚呢樣嘢。

周小姐：對唔住，就係我想喺呢個階段 interpose。呢份文件--即係文件喺第一頁已經講到，係有關講番"roofing, waterproofing and exterior wall systems"。李生剛才已經話其實焊接係水喉，或者其他嗰啲係完全唔同，所以其實呢個文件裏面所提及嗰啲嘢係 in the context of roofing, waterproofing and exterior wall 嘅。

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主席：又唔係完全唔啱嘅，因為佢有講 safe drinking water 嘅，其實，啱唔啱？

周小姐：係。但係佢係 in 嗰個 context。

主席：唔係--我知，我而家都唔係好知道，其實 Mr Yin，你想 achieve 啲乜嘢嘢呢？你想問呢位李先生，想佢--你想話畀我聽--不如咁講，你想話畀我哋委員會聽--因為你 ultimately 都係想我哋知道咋嘛，你想我哋知道咩嘢？

殷先生：係，主席，明白。似乎就業界方面，就算係喺嗰個教育嗰啲工人嘅過程中，就講就有講過話應該用不含鉛個焊料嚟接駁水喉，講就係講咁多。

主席：係，係。

殷先生：但係其實係有人點解--即係有鉛個焊料同無鉛個焊料用起嚟有咩嘢分別？有冇誘因，點解會有誘因令到工人會去用啲有鉛個焊料？

主席：咪頭先石大狀咪已經 explore 過呢一方面嘅嘢囉。

殷先生：如果委員會覺得係即係如果係睇文獻，唔需要同證人講嘅，咁我唔問嘞。

主席：唔係呀，你--所以我咪問你囉，你想我知道咩嘢呢？

殷先生：因為似乎就如果我哋睇個文件就有講，就話含鉛嘅焊料有一個好特別嘅樣嘢，佢就係 reduce 個 surface tension，即係佢幫助去減低一個張力，令到嗰啲焊料係容易啲接駁。而一般嘅工人喺好多情況下都覺得係使用不含鉛嘅、無鉛嘅焊料係技術上係難啲嘅。即係如果佢哋喺訓練...

主席：咁你不如直接問佢喇，...

問：呢樣嘢你知...

主席：...你問咁耐你都未問到。

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李生，你知唔知道呢有鉛嘅焊料係可以減低呢個焊...

殷先生：張力，表面張力。

主席：...--表面張力喎？

答：表面張力會唔會減低，我就唔敢講。但係我哋見到啲工人，即係話佢如果技術夠嘅，頭先我哋都所講，錫線熔起上嚟都係好稀嘅，好似啲水咁流走，你要掌握到個溫度，掌握到個時間，咁你就能夠做到嗰道口完美，一樣可以唔漏水，一樣可以做到完美。但係如果技術唔夠，可能性有啲人會利用一啲有鉛嘅錫料去做--我琴日都講咗，有鉛嘅錫料佢係比較杰少少嘅，能夠塑造到個形狀喺個焊口個表面，覆蓋咗所有嘅位置。

主席：表面張力...

答：嗄，個表面。

主席：對唔住，表面張力即係乜嘢，英文？

殷先生：Surface tension。

主席：Surface tension 同嗰個 viscosity 有咩嘢關係，有冇關係？你而家講 viscosity 抑或 surface tension？

殷先生：我就講--我嘅理解係因為 surface tension 嘅，佢嘅證供就講 viscosity。

主席：係囉，兩樣嘢嚟個喎。

殷先生：佢就話佢唔識得 surface tension。

主席：佢唔識喇，係呀，繼續。

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殷先生：所以我 move on。

問：但係你同意就係以一個技術唔夠工人嚟講，或者就算--即係佢係會覺得用一啲有鉛個焊料係易做啲，你同唔同意？

答：唔啱。

問：唔啱，okay。

答：唔應該因為佢技術唔夠，佢用一啲唔合規格嘅材料，去令到...

問：我唔係同你講應唔應該，我係講嗰個接駁個過程會唔會對佢做起上嚟覺得容易啲？

答：如果你係一個技術工人，夠技術嘅，唔應該咁做。

問：你同唔同意話如果嗰個係一個容易啲嘅方式係有一個誘因，潛在有個誘因啲工人會咁...

主席：呢個係遲啲同我講。

問：你哋係有冇考慮過，因為咁係要特別去著意去解釋畀啲工人聽，其實唔係話講一句「唔好用有鉛焊料喎。」而係要令到佢哋認知用咗有鉛焊料係好大鑊個喎？

答：我哋有同佢講。

主席：你講嗰陣時定而家？你講...

殷先生：嗰陣時，嗰陣時。

主席：嗰陣時冇講吖嘛，講咗畀你聽喇，係呀。

殷先生：2015年7月之前。

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答：我哋講用有鉛嗰個會對身體有害吖嘛，但係有害到個程度係點樣呢，我琴日都講咗出嚟，就我唔知嗰個病理、醫學上會變成點樣，總之對身體係唔好。

主席：唔。

殷先生：我唔問--我冇嘢問。

主席：問喇。

<u>陳宇文先生盤問</u>

問：李師傅，你好。

答：係。

問：我代表瑞安嘅，其實我想澄清番下，雖然佢講過--你話有鉛焊枝就會比較常見啲，係咪？

答：係。

問：尋日你啲--尋日你示範嗰啲咁嘅視頻，入面有--你就睇到--我哋睇到嗰啲喉嘅駁位都駁得算係幾緊嘅，唔係話塞入去嗰陣時，都要用少少力去塞入去，咁個空隙應該就唔係好大，係咪？

答：好細。

問：好細嘅啫。如果我係用有鉛焊枝嚟焊落去嘅話，如果係個黏性係咁高嘅，可能杰啲嘅話，咁我焊落去係咪會好多有鉛焊枝，如果我熔咗啲有鉛焊枝，係咪好多有鉛焊枝可以滲透入去入面，或者甚至塞住條喉或者咁樣樣，從你哋見？

答：我就未試過咁樣做，據我理解，如果你嗰個有鉛嘅焊枝，如果你係燒落去，佢都會--個液體狀都會稀啲跟住行嘅，只係個表面--如果你可能塑造個形象係個表面嗰度，即係話你個溫度冇咁高，佢就容易製造一個形態，但係如果你繼續燒落去，佢都好似一個液體咁樣流走。

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問：Okay，得。第二個問題，如果你睇番你嘅證人口供，就係3125頁，file X，麻煩你，嘅第2段，好簡單其實。呢度就話你1981年就完成咗基本嗰個工藝，喺水喉嘅，之後，你就係投身呢個建築界。

答：係。

問：咁喺呢個建築界，你係做水喉方面嘅工程，係咪？

答：係。

問：係。就喺私人屋苑定係公共屋苑多？

答：主要係私人屋苑，公共屋苑我未做過。

問：公共你未做過。

答：嗰啲私人屋苑或者醫院、噴水池或者好多唔同形式嘅一啲建築物，...

問：唔，唔，Okay。

答：...都係做水務系統。

問：係。你執教咗之後，1996年執教以後，你就冇再投身呢個建築界去做呢啲水喉工程？

答：冇㗎嘞。

問：Okay。如果係咁嘅話，...

答：我重申一點，96年我入職議會嗰時間，因為我仲有工程喺出面做緊，咁喺我見工嗰時間，當建造業訓練局亦都好渴求個師傅儘快返工，我仲有大概半年，我啲工程就完，因為我當其時我面試嗰陣時，我同主席講當其時，就主席容許我放咗工之後，繼續出地盤完成埋手頭上嘅工作。我亦都承諾咗喺完咗嗰單工作之後，唔會再繼續接出面嘅工程嚟做。

問：Okay。

答：直到96年入咗建--CIC--CITA之後，有半年時間嘅，我係仲夜晚黑有出面接觸嗰啲工程。

問：即係我諗97年嘅時候你已經冇做，可以咁講，或者98年？

答：係嘞，可以咁講，97年中嗰喇。

問：因為點解呢？我點解咁講，如果你睇番你第3段，第3120頁，你就話2002年就用銅喉就開始普及化，喺嗰個公營嘅房屋。咁喺嗰方面，你就亦都當然冇參與，因為講真，你已經係任教，由96年開始任教，係咪？

答：96年開始任教。

問：Okay。因為如果係咁嘅，我咁推論嘅話，你知公屋就通常用明喉㗎喇？

答：係。

問：係。咁就私人屋苑就通常用暗喉喇？

答：冇錯。

問：喺呢方面你亦都會即係冇機會去體驗到啲人，其實啲工人2002年打後，其實實質喺嗰個工地點樣去焊接嘢，你都冇機會去參與，係咪？

答：有㗎，我哋有機會睇到㗎。

問：你哋有嘅。點樣呀？

答：因為我哋議會規定我哋所有授藝導師都係要一年出去最少兩次地盤實地考察現時行業上嘅個做法，同埋有啲咩嘢新嘅工具，或者新嘅材料可以帶--引進入去建造業訓練局去教啲學員嘅。

問：Okay。

答：同埋仲有一個關鍵，就係話我哋啲學員喺兩年制個年代，兩年制嘅基本班，佢仲要出去地盤實習，咁實習個過程，佢被分派到去唔同嘅地盤，落去做，我哋師傅亦都要落去睇佢哋嘅。

問：好。

答：咁個過程裏面，我哋同業界係有接觸嘅。

問：Okay。我哋公共屋苑好多時嗰啲明喉，就係會行天花板或者咁樣，咁如果佢要用無鉛焊枝嚟焊，咁你如果睇下...

陳宇文先生：唔知委員會可唔可以將嗰卷"FRY"...

主席：佢知喇，佢用嚟用去都係用一卷。

陳宇文先生：嗄。

問：嗰卷嘢就其實都唔係輕手嘅？

答：普通。

問：普通。咁如果你成日都要咁樣俯首咁樣嚟到去焊，咁會唔會好重？你有冇見到啲人因為咁樣，所以就剪咗佢出嚟一條條？

答：有。

問：你都有？

答：我見過啲師傅都係剪咗出嚟摺埋一個 50mm 嘅嘅圈，咁揸住之後，就一支伸出嚟咁樣燒，都有嘅。

問：Okay，得。

陳宇文先生：我冇嘢問，okay。

殷先生：主席，我可唔可以申請問多一個環節嘅問題？好短嘅。

主席：一個環節呀？

殷先生：一個問題嘅，其實不過要睇睇一個 BS EN 嘅 table。

主席：邊方面？

殷先生：銀焊。佢琴日嘅證供話熱水，銀焊嘅 performance 係好過無鉛焊料嘅。

主席：係吖。

殷先生：我想佢睇睇 BS EN 嗰個 table 6 入面，係有 working temperatures and pressures 係冇分別嘅。

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主席：好呀。

殷先生：嗄。

殷先生繼續盤問

問：李生，我想你--琴日你記得你有講過，就問你點解嗰啲私人屋苑或者醫院，咁你講到就話點解佢哋用銀焊，就因為走熱水--因為有--供水嘅系統有熱水同冷水嘅分別嘅，你記唔記得？

答：係。

問：我想你睇睇就係一個英國標準，關於焊料嘅一個分析嘅。就好多地方都有嘅，我委員會嘅文件，不過方便就睇睇B15.4，第40193頁。

殷先生：嗰個係琴日馮女士第二個證人口供嘅附件最後一頁。

答：係。

問：你睇到呢一個表就列出嗰啲最高嘅溫度。即係入面走，個喉管入面走嗰啲液體嘅溫度同埋佢可以受幾多壓力嘅。咁你睇到佢個表嘅系列出兩樣嘢，一個叫做"Soldering"，一個就"Brazing"。即係上面就講錫焊，下面就講銀焊。

答：係。

問：咁錫焊嗰方面，佢係有兩種嘅，第一個，就係含鉛嘅。即係羅馬數目字I嗰度，佢係講含鉛嘅焊料，有50/50或者60/40。

答：唔。

問：咁跟住羅馬數目字II同III，就係講嗰啲無鉛焊料。

答：係。

問：跟住羅馬數目字IV、V、VI，就講呢個Brazing嘅，即係銀焊嗰停

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咁嘅。

答：係。

問：佢呢度當然唔只淨係講銀焊，佢有其他嘅高溫焊料，英文就 Brazing。咁你見到，如果睇有鉛嗰啲，嗰個 maximum temperature 嗰度，佢有 30 度、65 度同 110，咁佢隔籬就有三個 column 就係講嗰啲壓力，佢可以承受幾多壓力。即係 30 度水溫、65 度水溫，同埋 110。咁我哋見到即係佢唔同口徑嘅喉管，佢承受到幾多壓力。咁打落去，佢又列出呢個無鉛焊料同埋嗰啲高溫焊料，你睇到嘛？

答：睇到。

問：咁見到嗰啲無鉛錫焊同埋嗰啲高溫焊料，基本上 30 度水溫、65 度嘅水溫，同埋 110 度嘅水溫都好，即係超過呢個沸點，水嘅，一般水嘅。去到呢個 108 mm 口徑嘅喉管嚟講，嗰個承受壓力嘅程度係冇分別嘅，即係無鉛嘅錫料同埋呢個高溫銀焊嗰類嘅高溫焊料，你知唔知道呢樣嘢，首先？

主席：再講多次你個問題。

殷先生：嗄。

主席：你最屘嗰個問題，你啱啱話冇分別，點樣樣冇分別呢？

殷先生：因為我哋睇到，譬如佢無鉛錫料 30 度水溫，我哋見...

主席：無鉛嘅錫...

殷先生：錫料，即係 II 同 III，category II and III。

主席：係吖。

殷先生：30 度水溫，我哋睇到 34 mm，就 25 bar maximum；54 mm，又係 25；就 108 就 16。咁我哋睇番銀焊，30 度水溫，又係 25、25、16；65 度水溫，無鉛錫料就 25、16、16；呢個銀焊，65 度水溫，又係 25、16、16。呢個 110 度嘅水溫，無鉛嘅錫料，就 16、10 同 10；而呢個銀焊去到 110 度亦都係 16、10 同 10。即係話由呢個 34 mm 口徑到 108 mm 嘅口徑，用兩種焊料，嗰個去到 110 度水溫嚟講，withstand 嗰個 pressure 嘅能力係冇分別。

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主席：你明唔明呢個 chart 呀？你明吖嘛？

答：我明，我明。

主席：唔。

問：呢一個資料，而家呢個係英國準嘅分析。

答：係。

問：呢一樣即係無鉛嘅錫料...

答：同銀焊嘅分別。

問：...同埋高溫銀焊類嗰停高溫焊料，...

答：我明。

問：...去到 108 mm 口徑嘅喉管嘅接駁，基本上去到 110 度水溫都嗰個性能係冇分別，呢樣嘢你知唔知嘅？

答：我就未睇呢個表之前，我係唔知嘅。

問：係。

答：但係而家今日睇咗，就知喇。

問：咁你如果睇完咗呢個咁樣嘅資料，你覺得你琴日講話因為熱水供水嘅需要就要用銀焊，成唔成立呢？

答：唔贊同，因為我琴日仲有一樣嘢講咗嘅，就係個技術上做得唔好。嗰啲師傅喺呢個私人屋苑裏面用錫焊嗰陣時係技術做得唔好，當其時試水係用凍水試，所以試唔到佢爆喉漏水，但係當佢入咗伙之後，行熱水嘞，啲熱水影響到。因為如果佢做得好，嗰啲口冇漏嘅；但係做得唔好嗰啲口，就漏水。所以喺當其時嘅發展商，汲取到呢個經驗之後，我哋見到佢嘅趨勢，發展商就開始轉用銀焊呢樣個動作。

問：明白。

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答：我見到個趨勢係咁樣。

問：換言之，可唔可以咁理解？就係其實純粹物料嘅性能嚟講，兩樣係冇分別嘅，但係因為要顧及埋工人嘅技術上嘅差異，就用銀焊穩陣啲咁解，係咪？

答：你可唔可以重複呢個問題？

問：純粹睇物料。即係無鉛嘅錫料同埋高溫嗰啲銀焊焊料本身嘅性能分別，其實就冇差異嘅，但係當你要顧及埋工人嘅技術參差嗰方面做得唔好，就用銀焊就穩陣啲，係咪咁解你嘅意思？

答：應該可以咁講。

殷先生：我冇嘢問。

主席：仲有冇人有嘢問？Ms Chow，有冇嘢問？

周小姐：冇覆問。

主席：冇覆問。

<u>主席問</u>

主席：我想問一問，我哋見到你示範嗰個抹錫瓜...

答：係。

主席：...呢一個咁嘅動作。因為我哋喺網上高睇譬如美國嗰啲所謂coppere association，就冇見過有呢個抹錫瓜，請問呢個抹錫瓜呢一個咁樣樣焊接呢個方法，用咗幾耐？

答：自我喺1980年接觸呢一行，入去建造業議會，我哋嘅前身嘅師傅帶落嚟，已經有呢個動作教我哋囉。

主席：好嘞，咁……

答：咁亦直到我入咗去建築業議會做導師，1996年，咁亦都見到佢裏面

嘅--所謂摘要裏面有呢個動作寫低，...

主席：所以就一路都...

答：...所以我都一路係有教。

主席：有教㗎嘞，唔。

答：承傳呢一個傳統。但係當然喺技術上、傳統上，我哋要教到足晒。

主席：係。

答：但係喺行業上，出面用唔用呢，係另外一個問題嚟嘅。

主席：啱嘞。

答：嗄。

主席：因為我就未見過出面點用，咁但係我哋咪有啲圖片咪做呢個辦房嘅時候咪影過啲相嘅，咁影嗰啲相，嗰啲工人示範，就好似似乎就冇呢一個所謂抹錫瓜呢一個咁嘅動作，佢哋就純粹就係攞啲 flux 就係抹咗喺個末端嗰度，咁跟住就將佢接駁埋一齊，就喺出面嗰個接駁口嗰度就咁搽。

答：呢個就因為--主席，我頭先講，就話我哋要教，一定教傳統。因為我哋嘅學生係一啲基本班，係啱啱離開學校冇幾耐，又係想投身呢個行業嘅，咁我哋當然由零開始教佢。但係就教完佢之後，佢出到去點樣做，同埋市場上，其實如果做細喉嚟計，我自己都曾經試過，就唔抹錫瓜都做到嘅。

主席：係喇。

答：個技術你掌握到個溫度，個師傅個技術係一樣可以做到一樣嘅效果，唔漏水。

主席：得。

答：同埋覆蓋面係一樣。

主席：係嘞，因為如果你做...

答：咁但係--嗄。

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主席：...抹錫瓜，就你就搽完啲--即係你...

答：松香。

主席：...搽完松香，搽完錫，搽喺上高，你又要抹一抹佢，...

答：冇錯。

主席：...咁跟住先至燒，燒完之後，跟住你又要用啲...

答：做多一個步驟，做多一個 step。

主席：係嘞。咁...

答：咁喺行業上，當然呢個 step 可能個工序會長咗、時間長咗、人工多咗。

主席：係嘞，係嘞。

答：即係我唔敢推測佢係咪因為呢個因素而唔做呢個動作。

主席：唔係，我想問一問，就係因為--理論上，如果啲工人貪快，就只會落--應該咁講，如果佢唔做抹錫瓜吓，即係做番嗰啲淨係最簡單嗰啲，淨係喺出面整個圈咁樣樣。

答：係。

主席：如果佢貪快嘅話，即係我嘅諗法，就理論上，如果係貪快，就唔會有好多錫走咗入去添。因為佢如果貪快，只會少咗錫入去嘅啫。

答：即係唔敢保證度口完覆蓋晒。

主席：唔係--啱嘞，咁有機會漏水。即係我哋--因為石大律師就見到--就話我哋去政府化驗所見到嗰啲，就係其實嗰啲錫係走晒入去個--即係喺個駁口嘅，挙咗出去嘅，係多得好緊要嘅。

答：喺個系統入面。

主席：係嘞。咁我就喺度諗，會唔會係因為有啲人係做抹錫瓜，做完抹錫瓜，搽完嗰一浸之後，就冇做你嗰個攞條布去抹，就跟住就插入去，就將啲錫就挙咗出去嗰個水喉嘅出面呢？

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答：唔係嘅。

主席：唔。

答：頭先我都解釋咗畀殷生聽。

主席：係吖。

答：抹嗰塊布個動作，只係將多餘嘅錫抹走。

主席：啱呀。

答：如果你唔抹走嗰啲錫，佢拱起個凹凸位，你直情係入唔到個配件。

主席：哦，因為...

答：因為配件都幾 fit 下嘅。

主席：係。

答：因為佢要靠個緊密度，利用個毛細管作用先滲到啲錫入去。

主席：係。

答：所以如果你加咗一層錫落去，你如果唔抹，你係可能性入都入唔到個配件。

主席：入都入唔到嘅？

答：係嘞。

主席：得。咁所以一定就係喺出面搽嗰個--如果佢唔係用抹錫瓜，就一定係喺出面搽嗰個時候，就搽好多好多好多，咁先至走咗入去，係咪咁樣樣？

答：我諗會係喇。

主席：唔。

答：但係都要睇技術，如果技術夠呢--即係我哋自己喺工場，我哋都試過。

主席：係，係，技術好唔使講，我哋而家講緊梗係技術唔好，係咪？

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答：嗄。

主席：技術好，冇問題。技術好，你用有鉛、冇鉛都可能冇分別，如果你技術好，係咪？得。

石先生：我有一個問題想跟進啲技術。

主席：得，好呀。

石先生：因為唔係同頭先嘅問題引進，但係既然李先生好多時候都強調技術。

石先生進一步盤問

問：銀焊你頭先講，就係話其實好多時候，就係如果啲人做錫焊，做得技術唔好，咁可能就做完私人屋苑啲水喉之後，藏咗入牆，跟住熱水經過，就爆咗，咁就好大事，所以就呢個係一個可能，就係點解啲發展商就話用銀焊咁樣。但係銀焊所要求嘅技術有咩嘢分別呀？即係你覺得銀焊要求嘅技術可能係低啲，所以就啲工人可能渣啲都唔緊要咁樣，定係點呀？有咩嘢技術嘅分別？

答：技術上，頭先我都--琴日都講過，用嘅工具上唔同。

問：銀焊啲槍勁啲㗎嘛，完全唔同㗎嘛？

答：銀焊係要一對風煤，...

問：係，係。

答：...賴一對喉，同埋佢受制於空間。

問：係。

答：如果我話--譬如我講，如果我上天花度做，就亦都幾辛苦，條喉都有個重量。

問：係。

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答：如果相對石油氣燈，輕擎喇，即係做錫焊。

問：係，嗄。

答：同埋喺法例上，就燒石油氣燈，就冇需要嗰個氣體焊接嗰個牌，但係相對燒銀焊，就一定要有嗰個氣體焊接個安全課程嘅牌。

問：同埋又唔知只准幾多個吖嘛，一個密室裏面。

答：係，一個範圍裏面唔可以藏多過兩對嘅風煤。

問：兩個，係吖，嗄，嗄。

答：係嘞，勞工法例。

問：咁但係頭先你答個問題，就其中一個答案就話，因為用錫焊，啲工人如果手勢唔係咁好、技術唔係咁好，咁就會引致到有啲即係熱水經過有爆咗個後果，就不如叫佢用銀焊。咁點解用咗銀焊會可以解決到呢個問題？即係點解用銀焊可以...

答：Sorry，你重複。

問：點解用銀焊可以解決到工人手勢唔好，所以整到即係焊接得唔好呢個問題？因為頭先殷大律師問你問題，就係即係佢就問你，即係佢畀咗一啲即係英國標準嗰啲數字你睇，就話其實銀焊同埋錫焊，可能個分別唔係咁大。咁你就話「唔係，咁仲有一個分別，就係你錫焊，你啲師傅手勢唔好或者技術唔夠，咁就即係啲喉可能會爆，咁但係就銀焊就唔會有呢個問題。」即係我想你澄清番，就係即係銀焊喺技術上有咩嘢分別，同錫焊？

答：唔係，我諗大家可能理解錯誤咗。

問：係，我想澄清番。

答：我想講嘅就係話銀焊，就係話一樣都係要個技術，個手勢都係要做得好，嗰條喉先能夠完滿，就唔係話啲技術差嘅工人就可以用銀焊去解決呢個問題。銀焊同埋仲有一個問題，就係話錫焊你揸支石油氣燈，你點樣燒，燒咗幾耐，嗰條喉都唔會穿。但係燒風煤，你調較個火焰較得唔啱，你稍為掂耐少少，成條喉都會穿窿，穿窿就補救唔到添，需要嘅技術仲要高啲添其實，掌握個溫度、個時間，都要係掌握得好好先燒到風煤，所以風煤嚟計，係個技術上係要高啲添應該。

Transcript by DTI Corporation Asia, Limited

問：即係銀焊？

答：係。

問：因為我睇番頭先殷大律師就問你嘅問題，就係純粹睇啲物料，即係純粹睇無鉛嘅焊料或者睇呢個銀焊，就大家嘅表現就一樣、差唔多，但係就考慮埋啲工人技術上嘅分野，就用銀焊就穩陣啲，即係個意思似乎就話用銀焊就可以確保就係即係唔會咁容易焊得唔好，出事嘞，爆嘞，殷大律師嘅意思似乎係咁，你就同意嘅。即係我就想睇下點解用咗銀焊係比較穩陣啲，即係考慮埋啲工人嘅技術參差。因為如果咁樣講法，就好似係講到就係話工人技術渣，用錫焊就好易出事，反而用銀焊就冇咁易出事，即係我哋就理解錯誤...

答：頭先我同殷大律師嗰度講嗰個，就係主要話我哋見到個發展商個趨勢，因為我唔方便講嗰個屋苑，漏水嗰個屋苑，我亦都唔方便講。咁即係我哋有好多學員出咗去做嘢，都有好多 feedback 返嚟畀我哋其實，不斷同我哋有聯絡，咁我哋知道嗰個屋苑就發生呢啲咁嘅事，而且唔係一個位置，係好多位置，咁後期都影響咗好多用戶。咁個過程裏面，見到嗰個發展商開始再落嚟嘅工程，喺個供水系統裏面就唔用錫焊，轉用銀焊，個情形係咁。

問：係，你呢個係外面觀察就係佢改變咗。但係我想知道就係你所理解嗰個內裏因由，殷大律師提議就係話「唔關個物料事，因為大家都係咁勁嘅啫，即係唔會話特別一樣係承受壓力勁啲，唔會話一樣特別嗰個堅硬嘅程度或者承受溫度係勁啲，咁就仲有咩嘢理由呢？」咁樣，佢就係問緊你，你嘅理解係咩嘢呢？定係...

答：我哋分開兩種講法，一種係我哋而家家用嘅熱水爐，咁我哋通常屋企嘅熱水爐唔會超過 100 度，大概喺 70 度左右，咁就佢行嘅熱水嘅溫度同埋嘅 pressure，內在壓力，如果錫焊係足夠頂到。但係如果個手勢做得唔好嗰啲，當因為佢做完個系統嗰個時間，佢試壓佢唔係攞熱水試，佢係攞凍水試，咁試壓嗰個時間咪冇熱力嗰啲水，咁可能佢係試到嗰個壓力，喺個收貨個過程裏面，可能啲管工都係收咗佢貨。咁但係佢到落完石屎之後，到佢入咗伙，佢個用戶真正用熱水爐嗰個時間，個熱水個溫度可能就會令到最脆弱嗰個技術上做得唔好嘅駁口，就喺嗰個位漏水。

問：咁同樣嘅問題都會喺用銀焊嗰度出現嘅啫，係咪呢？

答：銀焊我仲未聽過有呢個現象出現。

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問：即係總之就係啲發展商為咗解決呢個問題就用咗銀焊，咁就即係...

答：係嘞，之後就未聽過有啲學員 feedback 返嚟話銀焊又出咗事咁樣。

主席：即係數字上高係一樣，數字上，但係實際上就唔同，係咪呀？數字上就係一樣。

問：同埋我想即係有一度就係即係都理解番，就係睇番頭先 40193 頁嗰度嗰個表，或者你可以幫一幫我，就係殷大律師畀咗你睇，就係睇羅馬數目字 II、III 嗰度，你可以見到。

答：係。

問：咁就 30、65 同埋 110，嗰度係承受最高嘅溫度？

答：係。

問：跟住佢叫你睇羅馬數目字嘅 IV、V、VI，就係銀焊嘅三個唔同嘅類別，亦都係承受分別 30 度、65 度同埋 110 度。

答：係。

問：咁其他右面嗰啲數目字都係類似咁樣嘅比較。咁殷大律師即係所得出嘅結論，就係話如果你用羅馬數目字 II 嗰個同羅馬數目字 IV 嗰個比，大家都係 30，你見到嘛？

答：見到。

問：你用羅馬數目字 III 嗰度第一個比，同羅馬數目字 V 第一個比，又係大家都係 65。

答：係。

問：用羅馬數目字 III 第二嗰個比同第 VI 嗰個比又係 110。但係係咪咁比，即係大家--其實呢個咁嘅寫法係咪 II 係同 IV 比，III 第一個就同 V 比，係咪咁比嘅呢？

答：我唔知佢做呢個表出嚟個目的係乜嘢，即係唔知佢係咪咁樣比較。

問：因為你用 II 嘅第一個比同 IV 比，梗係數目字一樣，但係即係用起上嚟係咪大家都一個級別，我嘅意思係，即係你明唔明白，其實？

答：呢個表我照睇，就係話佢用錫焊，無鉛嘅錫焊同埋用銀焊個效果係一樣，照睇到個數字上。

問：得，唔該。

殷先生：主席：我可唔可以問一個跟進石大狀嘅問題？

主席：不可以。咁我哋問唔完個囉喎，係咪呀？得，唔緊要。不可以，不可以。冇喇嘛？得。

唔該晒，李生。

答：多謝，主席。

主席：跟住係林先生，係咪呀？

講者（不能辨別）：係。

主席：或者我哋要...

石先生：咁我哋可能要停一停，因為要...

主席：...take 一個 break 先，係，唔該。

上午 11 時 18 分聆訊押後

上午 11 時 37 分恢復聆訊

出席人士如前。

主席：係，Mr Wong。

王先生：係，唔該。

主席：不如宣誓先我哋。宣誓先，林先生。

證人：林德深（何標記前僱員（持牌水喉匠）（啟晴邨和葵聯邨第二期））（重召）再以本地話宣誓作供

主席：唔該。

王先生盤問

問：早晨，林生。

答：係，早晨。

問：我代表水務署。咁我上次就問咗你，關於你喺何標記，你話喺 2010 年辭職。你當日喺 1 月 17 號，就向呢個委員會提交咗一份補充文件，咁你就話因為你發現何標記所用嘅物料同你提交畀水務署嗰個 WWO046 入面個附件個物料係唔一致，所以你覺得呢件係好大件事，會扣分嘅，所以你就辭職。你記唔記得你講過啲咁嘅嘢？

答：係有咁講過。

問：好。我想問下你，喺你辭職之前，你點樣知道何標記用嘅物料，同你提交嘅 WWO046 係不符？

答：因為我曾經係做驗收嗰陣時畀水務署扣過分，所以我發覺佢點解唔跟附表嘅程序去買嘢，係則師同水務嗰邊簽好嘅，嗰份文件係唔應該改。但係我唔知佢為咩嘢用其他方法，可以買其他材料去地盤，亦都冇人監管，我都唔知道點樣做。

問：唔，一步一步嚟。你填咗張 WWO46 之後，你自己心入面就知道你填咗啲咩嘢物料，啱唔啱？

答：應該係。

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問：好嘞，你喺工地度，啲物料送到嚟，你會唔會去抽查，或者認知究竟實際上係乜嘢物料送到個工地？

答：呢個係由另外一個喺管理嘅人做，即係嗰啲唔係我去處理。

問：即係話你作為持牌水喉匠，你係唔知道有啲咩嘢物料送到去工地？

答：即係咁樣講，即係我哋嘅程序就係有分開工作，即係就我只係負責係簽牌，嗰啲物料供應，買乜嘢，就由佢哋嗰個合約部同嗰個採購部去處理。

問：係。咁我想問下你嘅認知，你作為持牌水喉匠，你認為你自己有冇一個責任係去監管嗰啲物料，即係實際上施工嘅物料，同你呈交畀水務署嗰個 WWO046 嘅附表嘅物料係一致，你認為你自己有冇咁嘅責任？

答：就咁嘅情況，責任就係亦都係會有，但係最主要一個問題就係話，我哋去到工地嗰陣時睇到嘅時候，就唔係一定揸住張 form，對到嗰個牌子、嗰個 number。因為嗰啲牌子只係得個 valve，唔一定睇到全部嘅資料。

問：好，一步步嚟。你話你有啲咁嘅責任，咁你就話嗰張紙就未必對得到，但係你係何標記嘅僱員，如果你話「我要何標記提供啲物料採購表畀我，睇下佢採購嘅物料同我提交畀水務署嗰張 WWO046 是否一致。」你可以做咁樣嘅要求，啱唔啱？

答：就咁樣講，我就係相信佢去地盤嘅時候--公司當然係跟過，冇錯先買，但係佢唔係買一種材料錯，買十樣，十樣都錯，咁我都--收屘知道嗰陣時，我都已經好大鑊，個地盤已經完工，仲有一個禮拜要入完工紙，我都唔知用咩嘢方法去制止，只有制止就係只有炒魷魚嘅啫，得兩樣嘢。咁就惟有一係諗過都係要同公司講「咁唔掂，我不如我唔撈。」

問：好，得。既然你咁講，好。我就順便帶你去睇你個 Q25 第 3 段。喺 Q25 第 3 段，你就話嗰個「潔具、水龍頭建築公司負責採購，水制、什制何標記公司負責採購，冇按 WWO046 part 1 及 part 2 材料附表採購和安裝。」咁呢個就係講緊啟晴嗰個--呢個就你講緊一般，抑或淨係講緊啟晴同埋葵聯？

答：即係我可以咁講，...

問：呢個係你個證人口供。

答：...呢個唔係淨係講呢一、兩個 site，因為我之前都有曾經發現咗有呢啲嘢。但係我哋都--因為當時如果要去到呢個咁嘅情況，因為建築公司通常到驗樓前，如果一個禮拜先到啲材料，一個禮拜--早裝就畀人偷晒；遲裝，我哋係偷步就報完工。如果佢下個禮拜要入紙，攞完工紙，我就而家呢個禮拜要入定紙等阿 Sir 嚟，希望補番個時間。所以變咗嗰個情況根本就完全睇唔到嗰啲嘢，即係嚟咗啲乜嘢，佢呢頭嚟，嗰頭裝，咁就變咗我哋都...

問：你睇唔到，冇機會睇到？

答：直情就係--我有好多嘢要做，因為成個地盤唔係淨係做佢一樣嘢，因為我哋嗰個責任要做水務局嗰啲文件，非常之多。

問：Okay，okay，得，你呢個係你嘅答案。好嘞，我問你第二樣嘢。你喺回答許大律師嘅時候，你就同我哋講你考牌嘅時候，都知道唔可以用無鉛嘅焊料，你又話法例都有寫，水務署都有指引，所以你自己係知道係要用無鉛嘅焊料，呢個係你回答許大律師嘅時候個答案，啱唔啱？

答：唔係，但係呢個問題就係咁講，我考牌嗰陣時就未正式係有嗰個通報，係 93 年先至正式係知道，但係八幾年我考牌嗰陣時，就係冇考呢啲嘢。

問：Okay，可以喇，當你 93 年已經知道呢樣嘢。

答：係嘞，冇錯，係。

問：好，咁我其實帶你睇過一段，但係我想再帶你睇多一次，C19.7，14793。

答：唔該。

問：C19.7 嘅 14793，第 12 段，就係你同水務署嗰個會面嘅紀錄。咁你第 12 段嘅第三行，你開始睇，佢就係咁講嘅，「林先生指焊接物料是由其公司嘅採購部負責採購，故他認為並不適宜就該些焊接物料作出檢查，他亦不清楚焊接物料嘅來源地。」咁我就想問，點解由於採購部負責採購，你認為係不適宜去檢查究竟嗰啲物料是否含鉛，係咪適當嘅物料？

答：因為嗰啲鉛唔係我去檢查，因為我係持牌水喉匠，佢哋買咩嘢料，我就只係相信公司啲料係 okay，但係佢經過地盤即係監察過，亦都即

係我哋當然要信任佢哋啲料係冇問題。

問：好。即係你認為其實你唔知道嗰啲係咪--你知道要用無鉛嘅，物料採購部嚟到，你就覺得你唔需要去--你作為持牌水喉匠，你冇責任去睇下佢係咪採購到適合嘅物料？

答：即係我冇咁嘅必要係特登專登檢查呢一樣嘢，因為好多材料，有成百幾種，我點樣可以逐樣去真係我仔細去走去搵佢啲出現問題嘅嘢，我做唔到呢個咁關鍵。

問：好，好。我去第二個題目。麻煩你睇 Q11。Q11 係你第一份嘅證人口供嚟，我就想你睇第 19 段，嗰啲字雖然細啲，但係我哋亦都睇到嘅。「考水喉牌時，冇要求考重金屬，亦無修讀重金屬課程。」呢個第一句。第二句，「應該不用焊條物料接駁，因為有重金屬」，就呢句停咗先。應該不用焊條，咁其實你係咪知道焊條同焊線嘅分別？即係焊條就係有鉛，如果唔係點解你認為係唔應該用焊條物料接駁？

答：因為我哋嘅專業覺得就係用火去燒啲金屬，根本上喺廠同爐燒係兩樣嘢嚟，用人嘅手工咁樣燒，我覺得係唔夠徹底，做得到，咁嗰啲金屬，嗰啲人揸住支槍燒下燒下，你都冇一個正確嘅溫度，咁我覺得呢個真係都唔知係合理定係做得到完善，即係我都覺得好有懷疑呢啲嘢。

問：我停一停先。即係而家你嘅講法又有少少...

答：即係...

問：即係我要了解你嘅講法先。你嘅意思即係話唔好理嗰啲係咩嘢物料，總之攞住支槍喺現場就咁燒嗰啲物料都唔啱嘅？

答：唔係唔啱，你點樣證實到個溫度，我哋都唔知用咩嘢去評，用隻眼嚟燒嗰啲--係燒佢屘出嚟，熔嘞，咁佢又話得，咁我都唔知佢係實際話效果係得定唔得，我都唔知真係。

問：你幾時有呢個懷疑--你幾時開始有呢個懷疑？

答：咁我做呢行嗰陣時梗係當然知，因為我哋係喺學師嗰陣時已經畀師傅鬧咗好多好多次，即係我哋都發覺呢啲做法係一般通常啲溫度要好夠，先至可以落錫，但係佢哋而家嗰啲根本都--我都唔知佢係點，咁多師傅，都唔知佢點樣佢有攞到呢啲專業出嚟做。

問：係。好嘞，咁就啟晴、葵聯，咁你都係有見到嗰啲水喉工人係攞住支

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槍係咁燒...

答：咁都冇辦法，又唔係我出糧，佢哋做唔漏水就得㗎喇。

問：你發覺咁樣嘅問題，你有冇同何標記反映，話「喂，咁樣唔得喎」咁樣？

答：咁又唔可以喎，我唔係專家，我唔可以同公司講「喂，你呢啲咁樣燒，唔得。」我又冇咩嘢制止能力，我只係一個持牌人。

問：我想問你，作為持牌水喉匠，你需唔需要知道或者教導嗰啲水喉工人點樣樣做燒焊？

答：咁樣佢哋經過呢個建造業嗰度係讀過下水喉技工，唔係我...

問：但係你覺得佢哋燒得唔啱，你覺得佢用嘅方法唔啱吖嘛？

答：但係我自己個人睇，我唔係代表全個行業。

問：好。都係睇番頭先嗰句，你就話「應該不用焊條物料接駁，因為有重金屬」，咁其實就算係無鉛嘅錫料都係重金屬，點解會話因為有重金屬，所以唔應該用焊條物料接駁，我又唔係好明，你可唔可以解一解？

答：因為有好多時候佢哋燒呢啲叫做重金屬，係屬於工業上用嘅，但係我哋喺食水方面就根本上係好少用到呢啲咁嘅處理。因為我哋以前三十幾、四十年前，係做嗰啲 fitting 裏面有一條鉛帶喺裏面，即係嗰啲係正式英國，佢一燒落去就有。而家呢啲自己加落去，我都唔知喺幾時會又出咗呢個可--即係咁嘅 okay 嘅，我都唔明嘅。

問：你唔明，okay。好，我再讀落去，你話「持牌水喉匠不認識重金屬問題」。好嘞，我想問你，持牌水喉匠喺呢度講係你自己，抑或你認為一般持牌水喉匠都唔認識重金屬問題？

答：睇下佢讀咩嘢課程，即係我講我自己肯定，我根本都冇讀過重金屬，我讀過重金屬，我就唔係做水喉呢行。

問：我哋而家講緊--你呢個證供係講緊啟晴、葵聯，係咪？

答：嗄。

問：因為係探討緊啟晴、葵聯點解出現呢個問題。你第 19 段就係話「因為持牌水喉匠不認識重金屬問題，所以導致出現漏洞。」即係你係咁

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寫。啟晴同埋葵聯就得一個持牌水喉匠，就係你自己，咁你係講呢個持牌水喉匠，我想澄清，即係知道你講緊咩嘢，你係講持牌水喉匠不認識重金屬問題，係你自己唔認識重金屬，定係你認為一般水喉匠不認識重金屬？

答：我自己唔識啫。

問：你自己唔識？

答：係呀。

問：但係你要對比呢個 WWO046 同埋何標記有冇用啱嗰啲材料嘅時候，你都要對重金屬有一定認識個喎，啱唔啱咁講？

答：唔會喎，根本上我冇重金屬呢個專題講過出嚟喎。

問：咁你對鉛都有一定認識，93 年之後，咁鉛都係重金屬喎？

答：嗰個鉛係金屬嚟嘅啫，但係我即係話我自己去考牌嗰陣時係冇呢啲嘢，我唔係話全部。

主席：我知。你嘅心目中重金屬係即係乜嘢？

答：重金屬即係話--即係而家你嗰啲叫做金屬嘅裏面成份幾多幾多嗰啲嘢，我係唔熟嗰啲嘢，即係嗰個金屬嘅性質嗰啲嘢。

問：好，咁我問另外一個問題。許大律師有畀你睇過一張水務署喺 02 年出嘅一個--sorry，1990 年出嘅一個 circular，咁嗰個就喺 C3 嘅 2422 頁。嗰一度就係一張 circular，一張水務署畀所有持牌水喉匠，嗰度就講即係你就有監管嘅責任，雖然你哋唔使落手落腳做一定，但係你有一個監管嘅責任，呢個你知個呵？

答：監管就喺嗰個地盤上，佢哋有冇需要，大家溝通。

問：即係佢咁講，佢話：

"I like to remind you that you should not hand over the plumbing work for which you have signed Waterworks

Form 'G' to any other person so as deem to transfer the responsibility for supervising the work unless the person to take over is himself a licensed plumber and has obtained the approval of the Water Authority through submission of a fresh Waterworks Form 'G'."

咁我就想問你，其實林生都識少少英文，係咪？

答：少少可以嘅，多就唔...

問：所以你睇到呢段，係咪？

答：嗄。

問：好。咁你同唔同意其實作為持牌水喉匠，你係有個責任去監管，supervising the works，即係監管嗰個水喉工程，你同唔同意？

答：監管水喉工程就好廣泛，即係唔係話即係睇邊種，純粹係睇下佢啱唔啱例，佢哋裝唔裝到呢啲嘢，同時嗰個地盤裏面啲工人去裝嗰啲位置驗唔驗到，大家要去同 consultant、好多人講，唔係淨係我一個去處理得到。

問：咁呢個監管嗰個水喉嗰個安裝工程，你同唔同意包括監管是否採用咗適當嘅物料？

答：物料就咁講，就分都有 consultant、則師同埋我公司嗰啲採購，佢哋訂嘅時候都--監管上嘅嘢梗係當然係即係睇佢嗰個要求，填報畀水務署嗰個，最重要係嗰份。

問：你又同唔同意監管，其實都監--包括監管埋現場工人施工是否適當，即係有冇咁樣嘅技巧、咁嘅施工水準到唔到位，亦都係你哋負責嘅呢？

答：呢啲當然要去，即係你喺地盤做咗啲嘢啱--驗到，到時成個地盤唔收貨個喎。

問：好。我最後想問你，你話你辭咗職之後，即係 2010 年，咁我哋上次都知道你仲簽咗十幾份嘅 WWO046。

答：唔係，你搞清楚先，唔係十幾份。係咁樣嘅情況嘅，房署嗰個做法就係一個 site，佢就加埋另外有啲公園仔、公廁，其實就係兩種 form，都係一個 site 嚟嘅，其實佢哋分開咗叫做十幾份，根本上其實一個

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site 可能三張紙都係一個 site 嚟嘅。所以你哋睇咗，好似覺得我又簽咗好多份，其實我一個人做咗十一年嘅，做咗十幾個地盤，起得咁多個地盤，根本上我都--即係嗰日都想講清楚少少，但係就係今日先講。

問：係，畀機會你講喇，而家。

答：咁變咗就十幾單，其實我哋開工前就已經係簽嘅時候，係未曾驗樓嘅時候，兩年前簽落嘅嘢。但係去到一幾年嗰陣時，即係個地盤都完，即係冇辦法，即係個問題係發生嗰個事出嚟，就唯有佢要安排有人嚟接手，我先可以走得，因為我嗰個任命係做呢樣嘢嘅時候，我就唔可以話走就走，即係你要搞番清楚畀人哋咁樣。

問：係。其實你最後屘離開，10年之後，你所簽嗰啲嘢，你都內心有擔心，何標記都係用唔合 WWO046 嗰張附件嗰啲物料，啱唔啱？

答：咁樣講，我已經寫咗出嚟嗰份嘢，佢八個地盤都唔同，我都冇辦法，我都唔知點制止佢，只有舉手話唔撈。

問：你有冇諗過向水務署講話「喂，我填嗰啲嘢其實就唔係實際上安嗰啲嘢。」同水務署講番--你有責任同水務署講番？

答：呢個可能我冇乜嘢機會。

問：冇乜嘢機會。點解冇機會？

答：同水務局講，即係叫 complain 我自己，我有乜嘢理由會走去做呢啲咁嘅動作。

王先生：主席，我冇其他問題。

主席：唔該。

MR PENNICOTT 盤問

問：Good morning, Mr Lam. I represent China State and I have just got a few questions for you on two topics. First of all, Mr Wong asked you a couple of questions

earlier about your resignation from Ho Biu Kee in July 2010. Do you recall those questions?

答：記得。

問：Which project was it that triggered your resignation from HBK?

答：因為我另外一份口供已經係列晒咗嗰啲資料喺度。

問：Perhaps you can help me with this. Is it at page Q1/27?

答：係，冇錯。

問：Does it follow from this page, Mr Lam, that it could only have been the projects mentioned at 3(A) and (B), because they are the only ones that are before 2010, when you resigned?

答：呢個問題就即係辭職之前嘅事，因為呢啲通常都係嗰個日期已經係完工嘅日子嚟嘅。

問：Yes, and so I ask my question again: looking at that list, which of these projects triggered your resignation in July 2010 from Ho Biu Kee?

答：因為我唔係淨係呢啲咁嘅項目出現問題，因為之前我已經受過水務署個紀律處分，曾經扣過分，所以我至可以發現到，即係翻查番愈嚟愈多問題，所以就唔可以再繼續。

問：Mr Lam, are you able to answer my question or not?

答：我想你再講多一次，我頭先可能聽唔清楚。

問：If you resigned in July 2010 -- and we have seen your resignation letter -- it must follow, Mr Lam, that the project that triggered your resignation completed prior to that date. Do you agree?

答：係呢個警察宿舍，屯門。

問：So that's the project that triggered your resignation,

is it, (B)?

答：唔只，仲有個紅磡邨。

問：Mr Lam, that can't be right, can it? Because we can see you have a date there of 4 January 2011, which is after the date of your resignation, so that simply can't be right, can it?

答：因為工程上係之前，仲要係開工成兩年嘅後面嚟嘅呢個日期，唔係前面嚟，因為兩年前開工，發現嘅時候已經係零--最後嗰啲，即係要報完工嘅時間。

問：The other problem with that evidence, Mr Lam, is that there's other evidence that shows there's no deviation in materials on Hung Hom at all. Were you aware of that?

答：呢個係唔可以，因為如果材料不符，第一，我又扣分；第二，個地盤又唔能夠通過。

問：All right. Let's move on. I hope the rest of the questions I want to ask you I can do by reference to page Q1/44. Mr Lam, that should be a letter dated 6 October 2015, signed by you and sent to the WSD. Is that correct?

答：呢封信就唔係正式畀水務署，係畀何標記，因為我同咗佢講話「如果你再咁樣情況，呢封信就會 send 畀水務署。」問佢同唔同意，佢就話係 hold 住唔好搞，畀啲時間佢。

問：Mr Lam, the top left-hand corner, does it say, "To: Water Supplies Department"?

答：但是呢封信我哋係先畀何標記去睇過，「嗱，如果你咁嘅情況，我就係 send 去畀水務署。」我講過。但係封信係冇畀嘅，只係畀佢嘅啫。

問：So you delivered this letter to Ho Biu Kee, and you think that it wasn't sent to the WSD; is that right?

答：係 e-mail 畀佢，我首先同佢開咗個會，即係話咁嘅事，我諗住會將

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呢啲--先尊重佢，畀咗佢睇咗，我係呢封信係 e-mail 畀何標記，淨係畀何標記，水務局就未畀，因為佢就話「畀我哋考慮吓，睇下有冇咩嘢方法解決。」咁我就都係冇畀水務署。

問：Okay. Are the contents of the letter accurate?

答：當然真實，呢個啲文件都有改過，我都唔知佢點解可以自動改材料，我都唔知佢有乜嘢權力。

問：Let's just look at a couple of aspects of this letter, Mr Lam. First of all, it's headed, "alteration of materials on site"; is that right?

答：係，冇錯。

問：And it is dealing with two separate premises or projects. For short, Kai Ching is number 1 and Kwai Luen is number 2; is that right?

答：係，冇錯。

問：Then what you say is:

"WWO46 part I and part II and the material lists of the above two sites had been approved, but Ho Biu Kee did not purchase materials in accordance with the annex in the WWO46."

Now, Mr Lam, I'm only interested in Kai Ching. When did you first know that Ho Biu Kee had not purchased materials in accordance with the annex on Kai Ching?

答：呢個唔係我知道，呢個係首先何標記要改材料係經過則師同意，我先至可以知道，因為我知道嘅時候已經裝咗喺現場，就係得到水務署嘅通知。

問：I will ask my question again, Mr Lam, and please listen carefully. If you recall, when did you first know that HBK had purchased and installed materials on Kai Ching not in accordance with the annex?

答：呢個表格知道係水務署畀我嘅，因為我係唔知道佢改咗咩嘢牌子，完

全冇人知，亦都冇一張清單係改嘢，亦都冇則師通知，亦都冇任何附表話畀我聽改咗邊啲牌子。

問：Mr Lam, who told you that the materials were not in accordance with the annex?

答：唔係話唔跟附表買，而係水務署話啲材料係唔對張清單。

問：The WSD said that?

答：水務署發信畀我。

問：When did they send a letter to you?

答：睇番佢嗰個...

問：Mr Lam, can I come at this way: could you please be shown bundle C7.1, page 5125.

答：Okay。

問：Mr Lam, this is part IV of WWO46. You signed it on 3 March 2013; do you see that?

答：係。

問：As at 3 March 2014, when you signed this form, part IV of it, did you know that there were materials not in accordance with the original annex?

答：係，睇唔到。

問：You didn't see it. When you signed this part IV form, part IV of this form -- I put it to you again, Mr Lam -- did you know that there were non-compliant or non-matching materials with the original annex?

答：我可以先咁講，因為我哋填嗰個清單，我哋係遵守嗰一份，佢加嗰啲嘢，我哋係冇人知道佢，我點解要走去做啲額外嘅嘢。

問：Mr Lam, on the original list -- we can have a look at it if you want; it's in the same file, starting at page

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4753. C7.1, page 4753. This is the original annex, itemising 35 pipes and fittings. Do you see that?

答：睇到。

問：When you signed part IV on 3 March 2013, did you check to determine whether these materials had been purchased and installed or not?

答：我可以咁講，如果公司係遵守我哋呢份附表嘅要求，就唔會有第二種材料出現。地盤有監管，有好多人，點解冇人講過，冇人知道，直情連出信水務署先知道係有咁樣出現。如果係根據呢個附表遵守買嘢，根本就唔會出現有漏洞。

問：That I understand, Mr Lam, but the question is: did you know that there had been non-compliance as at 3 March 2013; "yes" or "no"?

答：呢個表格係經過公司，全個工地亦都大家都同意係可以報完工，唔係淨係我一個人去簽。

問：That's not my question, Mr Lam, and I think you understand that that's not my question. You have referred to various conversations that were had on site in relation to Kai Ching; HBK were involved, China State were involved, the Housing Department was involved in these conversations. They didn't take place, did they, Mr Lam, because you didn't know as at 3 March 2013 that there was non-compliance? You just didn't know, did you?

答：就咁樣講，我哋喺做呢一份文件嘅時候，係無需要我哋係同則師、監管人一齊，只係收到佢哋話要驗樓，全部啲嘢做晒，合格，佢哋只係要求一個日期，幾時攞到入伙紙。

問：Mr Lam, do you agree that at 3 March 2013, you did not know that there had been non-compliance with the original annex?

答：呢個我唔記得。

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問：Just one last question, in light of that answer. Can I ask you to go back to Q1/44, please. If you would be good enough, please, to look at remark (2), the penultimate paragraph. You say there:

"If materials had to be altered at such a stage, the contractor and the Housing Department said that it would affect the inspection and handover progress" -- and then the important words – "and also said it would be fine if the materials complied with BS [British Standard] ..."

Mr Lam, when you signed part IV on 3 March 2013, did you check that all the materials on the annex complied with the British Standards?

答：英國標準佢當年係有，但係個牌子係唔同啫。

問：I will ask my question one more time, Mr Lam: did you check, on 3 March 2013, that all the materials in the annex complied with the British Standards; "yes" or "no"?

答：呢個係冇，因為佢裝嘅嗰啲，佢係而家安咗唔啱嘅牌子，佢都係有英國標準，即係而家睇，即係唔係講13年講嘅嘢。

MR PENNICOTT：I keep to my promises.

主席：Thank you。有冇嘢覆問？冇人有興趣問，okay，冇嘢問。

唔該晒林先生，畀完口供。

答：係，唔該晒，唔該你。

主席：得，走得㗎嘞。

答：好，唔該你，唔該。

主席：或者我哋 break 一 break，等你離開，好唔好？

答：好呀。

主席：Break 十分鐘。

答：唔該你，唔該你。

下午 12 時 19 分聆訊押後

下午 12 時 28 分恢復聆訊

出席人士如前。

聶先生：係，主席，我代表職業訓練局。

主席：係，Mr Nip。

聶先生：我第一位證人係盧永康先生。

建業訓練局第一證人：盧永康（職業訓練局香港專業教育學院（摩理臣山）建造工程系系主任及首席講師））以本地話宣誓作供

聶先生主問

問：盧先生，你就呢個聆訊，係做咗一份證人供詞。

答：係。

問：可唔可以你揼開你證人供詞？咁就有二十幾頁，請你揭去第 22 頁，唔該。嗰度有個簽名。

答：第 26 頁，係咪？

問：22。

答：22。冇錯，係，有個簽名。

問：嗰個係你本人嘅簽名？

答：冇錯。

問：同樣地，23頁都係你本人嘅簽名？

答：冇錯。

問：我知你有幾度地方想更正，但係我先讀出晒成份嘅證人供詞，然之後我就會帶你去睇番有啲咩嘢地方你想更正。

答：好。

問：係，咁你聽我讀出先。

Witness Statement of Lo Wing Hong Of （盧永康）

1. I, Lo Wing Hong （盧永康）, provide this statement in response to the request made by way of a letter dated 18 November 2015 (**"the Request"**) issued by Messrs. Lo & Lo (**"Lo & Lo"**), the solicitors acting for the Commission of Inquiry into Excess Lead Found in Drinking Water (**"COI"**) to the Department of Construction of the Hong Kong Institute of Vocational Education (**"IVE"**). The Request requires responses to a total of eleven areas raised by the COI.

2. I am authorized by the Vocational Training Council (**"VTC"**) to make this statement in response to the Request of the COI.

3. I was graduated from the University of Hong Kong and obtained a degree in Civil Engineering back in 1985. I joined the VTC in November 1994 working as a senior lecturer. I was responsible for teaching and managing the construction related courses in the IVE (Tsing Yi) (formerly known as the Hong Kong Technical College (Tsing Yi)) since then. I became a principal lecturer and also the head of the construction

department of IVE (Morrison Hill) since 1 September 2014.

4. I am a member of the Hong Kong Institution of Engineers since 1990 and I have been appointed as a member sitting in the Advisory Board of the Licensing of Plumbers since August 2015.

5. In response to the Request of the COI, this statement mainly covers the plumbing courses and training programmes offered by the VTC and/or IVE and it is made according to my best knowledge on the subject matter and relevant information which I can have access in VTC.

6. I understand that Mr. Leung Man (**"Mr. Leung"**) (the senior instructor of the construction department of IVE (Morrison Hill) and Mr. Chan Tze Kin (**"Mr. Chan"**) (instructor of the course working in the VTC Pokfulam Complex) will be responsible to provide responses to Areas 6, 7, 8, 10 and 11 of the Request. I have read the witness statements of Mr. Leung and Mr. Chan both dated 23 December 2015 and I believe the contents of their witness statements are true and correct. References of their witness statements would also be made in my witness statement.

A Brief History of VTC and IVE

7. VTC was established in 1982 to provide skills-based training to the Hong Kong workforce. In addition to its role as a provider of vocational education in Hong Kong, the VTC also acts as an advisory body to the Hong Kong Govermnent on issues related to the vocational and training needs of Hong Kong. Under the Vocational Training Council Ordinance (Cap. 1130), VTC is also tasked with the promotion of apprenticeships in Hong Kong; providing vocational training opportunities to disabled persons over the age of 15; to provide courses

for the improvement of industry in Hong Kong; and to create and manage the facilities required to carry out these activities.

8. There are altogether 13 member institutions under the VTC Group as follows:-

(1) Technological and Higher Education Institute of Hong Kong;

(2) Institute of Professional Education and Knowledge;

(3) School for Higher and Professional Education;

(4) IVE;

(5) Hong Kong Design Institute;

(6) Pro-Act by VTC;

(7) Hotel and Tourism Institute;

(8) Chinese Culinary Institute;

(9) Maritime Services Training Institute;

(10) Youth College;

(11) Integrated Vocational Development Centre;

(12) International Culinary Institute; and

(13) Shine Skills Centre

9. IVE was formed in 1999 by integrating the 2 technical colleges and 7 technical institutes of VTC and became one of major academic arms of VTC in providing training from technician to higher technician levels covering a wide range of disciplines and industries.

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Area No. 1 of the Request

10. Pursuant to Area No.1 of the Request, I was asked to provide a historical account of the plumbing courses and training programmes offered by the Construction Department since 1969 (the year when the Morrison Hill Technical Institute ("**MHTI**") was founded) until now ("**the Material Time**"). Such account should include the name of the courses and training programmes, syllabuses and course outlines, duration thereof, areas and topics taught, whether any practical training was/is given and whether examinations (written and/or practical) would have to be passed, and what qualifications and job prospects these courses and programmes would lead to.

11. With regard to the construction department of IVE (Morrison Hill), the history of the construction department can be traced back to the mid-sixties when technical education and training for construction technicians was solely managed by the then Hong Kong Technical College ("**HKTC**") at Hunghom. The first ever technical institute at the Morrison Hill, **MHTI** was founded in 1969. It took over from HKTC the courses at diploma and craft certificate level. The construction department was one of the six founding departments of the Morrison Hill. The earliest record of the plumbing and pipefitting courses offered by the MHTI was a sheet of sessional examination result in 1969 / 1970 for a class of PTDR class (a commonly used abbreviation for part-time day released mode of study) of plumbing and pipefitting. I enclose copies of the redacted examination result as **Annexure 1**. The course included the following subjects:-

(1) Craft Theory;

(2) Craft Drawing;

(3) Craft Practice;

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(4) Science & Calculations; and

(5) English & Liberal Studies.

12. The earliest syllabus of the plumbing course found to be offered by the MHTI was in June 1970. A copy is attached as **Annexure 2**. It is a 3-year part-time day-release (PTDR) or part-time evening (PTE) course with the learning subjects quite similar to those shown on the 1969/1970 examination results sheet with the following subjects

(1) Craft Theory;

(2) Craft Drawing;

(3) Craft Practice;

(4) Craft Science

(5) Craft Calculations; and

(6) Building Construction.

13. The earliest prospectus of MHTI could be found was of the year 1971. According to the said prospectus, the following courses on plumbing and pipefitting were offered:-

Mode	Code	Course	Duration	Entry Requirement
FT (Full-time)	204	Plumbing and Pipe-fitting 潔具及喉管裝配	1 yr	Completion of Primary 6 or equivalent

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PTE (Part time evening)	216	Plumbing and Pipe-fitting 潔具及喉管裝配	3 yrs	Completion of Primary 6 or equivalent

The principal subjects of the above courses appear to be similar to those described in paragraph 12 of my witness statement. Sample copies of the certificate issued to the graduates were found and the award title shown on the certificate was "Craft Certificate in Plumbing and Pipefitting（潔具及喉管裝配行業技能證書）". A sample copy of this certificate is also enclosed in Annexure 1.

14. The number of technical institutes increased to five during the period from 1975 to 1979 and later increased to a total of seven. They were collectively called Technical Institutes (**"TI"**). Both MHTI and Raking Wong Technical Institute (**"HWTI"**) had construction departments and offered courses on plumbing. The next available prospectus of the TI was of 1979/1980, 1980/1981 and the following two courses were offered to the public:-

Mode	Code	Course	Duration	Entry Requirement	Awards	Offered by
PTDR	0266	Craft Studies in Plumbing 潔具及泵管裝配	1 yr	Trainee from Construction Industry Training Authority Centre	Craft Cert	HWTI
PTE	0286	Plumbing and Pipe-fitting 潔具及喉管裝配	3 yrs	Completion of Primary 6 or equivalent	Craft Cert	MHTI & HWTI

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It was also mentioned in the prospectus that the course 0286 was recognized by the City and Guilds of London Institute.

15. Pursuant to the Prospectus of TI of 1981 to 1983, one more course was offered in addition to the two courses referred to in paragraph 14 of my witness statement as follows:-

Mode	Code	Course	Duration	Entry Requirement	Awards	Offered by
PTDR	0276	Plumbing and Pipefitting (Apprentices) 潔具及喉管裝配（學徒）	3 yrs	Completion of Primary 6 or equivalent, sponsored by employer	Craft Cert	MHTI

I believe the reason of adding the word "Apprentice" to the course title was most probably to align with the introduction of the Apprentice Ordinance in 1976.

16. The earliest course scheme available was in December 1980. It was a "Draft Submission on Proposed Modular Structure for Construction Craft Certificate" (see **Annexure 3**). The entry requirement was revised to "Completion of Form 3". A detailed course structure with syllabi was laid down. The coverage of subjects contents were expanded and included the following:

(1) Stage 1

(a) Science I

(b) Calculations I

(c) Drawing I

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(d) Craft Theory C I

(e) Craft Practice C I

(2) Stage 2

(a) Science C II

(b) Calculations II

(c) Drawing C II

(d) Craft Theory C II

(e) Craft Practice C II

(3) Stage 3

(a) Craft Theory C III

(b) Building Construction III

(c) Specification C III

(d) Measurement C III

(e) Craft Practice C III

17. In 1982-85, a construction department was established in the Kwai Chung Technical Institute (**"KCTI"**) and offered plumbing training courses during that period of time. According to the TI Prospectus for 1983 to 1985, 1986 to 1988 and 1988 to 1990, the following two courses were offered with the following revised entry requirements:-

Mode	Code	Course	Duration	Entry Requirement	Awards	Offered by

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PTDR	0266	Plumbing and Pipefitting (Apprentices) 潔具及泵管裝配（學徒）	3 yrs	Completion of Form 3 or equivalent and sponsored by employer	Craft Cert	MHTI HWTI (KCTI from 1983 to 85 only)
PTE	0286	Plumbing and Pipefitting 潔具及喉管裝配	3 yrs	Completion of Form 3 or equivalent	Craft Cert	MHTI & HWTI

Please note that the brackets with "Apprentices" were added into the course title of 0266. However, the said word has been removed from the course title of 0276. The principal subjects stated in the prospectus appeared to be in line with the 1980 course proposal.

18. In the TI Prospectus for 1990 to 1992 and 1995 to 1997, the brackets with "Apprentices" were removed from the course title for 0266, and course titles were clearly spelled out as "Craft Certificate in Plumbing and Pipefitting". The Chinese title of the course in the 1995-97 prospectus was found to be changed to "水喉全科技工證書". The construction department in Tuen Mun Technical Institute (**"TMTI"**), which was established in 1986, started to offer plumbing training courses in around 1995.

19. The circular letter dated 18 December 1992 issued by the Hong Kong Water Supplies Department (**"WSD"**) informed the practitioners in the plumbing industry that the Craft Certificate in Plumbing and Pipefitting（潔具及喉管裝配）of the courses 0266 and 0286 issued by VTC after 1987 was one of the requirements to become Licensed Plumbers (**"LPs"**) and the WSD licensing examination was replaced by a new course Certificate in Plumbing Service (Hong Kong) with course code 5267.

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I enclose a copy of the WSD Circular letter dated 18 December 1992 as **Annexure 4**.

20. The short course Certificate in Plumbing Service (Hong Kong) （香港水務設施）with course code 5267 first appeared in the TI Prospectus of 1995 to 1997 and the duration of the course was 35 hours at that time. The earliest examination mark sheet available for the course 5267 was of the Summer of 1995 and the assessment was composed of two parts "Theory" and "Practice". I enclose a copy of the redacted 1995 examination result as **Annexure 5**.

21. A comprehensive course scheme of the "Craft Certificate in Plumbing and Pipefitting - 0266/0286" was found in 1996 (**"1996 Course Scheme"**) (see **Annexure 6**). It outlined not only the syllabi of the 15 modules of the craft certificate course, which were similar to those in the 1980 proposed course scheme, but had also included the course outline of the two modules, "Theory" and "Practice" of the short course "Certificate in Plumbing Service (Hong Kong) – 5267".

22. IVE was established in 1999. In the prospectus of 1999, the new course codes 55776 and 53776 were adopted for the PTE (i.e. part-time evening) and PTD (i.e. part-time day) modes of the course Craft Certificate in Plumbing and Pipe fitting （水喉科技工證書） respectively.

23. Records show that the construction departments of the IVE (Morrison Hill) and IVE (Tuen Mun) offered the following two plumber training courses to the public since 1999:-

(1) A regular 3-year course of Craft Certificate in Plumbing and Pipefitting. This course is further divided into the following 2 modes of study:-

(a) Part-time day mode with course code 53776 in IVE (Morrison Hill); and

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(b) Part-time evening mode with course code 55776 in both IVE (Morrison Hill) and IVE (Tuen Mun).

(2) A short course of Certificate in Plumbing Service (Hong Kong) (a part-time evening course with course code 56767).

24. Under the academic structure of IVE, the craft certificate course 53776/55776 were validated to become a 3-year modular programme in 2001 with a set of comprehensive course scheme ("**2001 Course Scheme**") outlining in details the curriculum structure, academic regulations, syllabi, assessment schemes, etc. The course was re-validated in 2004 to become the current semester-based programme with the following modules:

(1) Semester 1

(a) Pipe Work Installation

(b) Plumbing Mathematics

(c) Plumbing Practice I(A)

(2) Semester 2

(a) Potable & Flush Water Supplies

(b) Plumbing Science

(c) Plumbing Practice I(B)

(3) Semester 3

(a) Hot Water Supply

(b) Construction Drawing

(c) Plumbing Practice II(A)

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(4) Semester 4

(a) Drainage Systems

(b) Plumbing Drawing

(c) Plumbing Practice II(B)

(5) Semester 5

(a) Fire Services & Gas Installation

(b) Building Construction

(c) Plumbing Practice III(A)

(6) Semester 6

(a) Plumbing Measurement

(b) Introduction to Information Technology

(c) Plumbing Practice III(B)

I enclose copies of the 2001 Course Scheme as **Annexure 7** and the 2004 Course Scheme (revised in 2008) (**"2004 Course Scheme"**) as **Annexure 8** respectively. The 2004 Course Scheme is an updated version with minor amendments to the assessment ratios of two modules incorporated in 2008. It is also the most updated and existing course scheme.

25. The duration of the short course Certificate in Plumbing Service (Hong Kong) - 5267 was later increased to 39 hours and the code was changed to 56767 in 2000 under the IVE coding system. The course contents were therefore developed into the current 2-module system:

(1) 32-hour review on the latest statutory requirements and procedures and then followed by a 2-hour written test

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(2) 5-hour practical test

A student has to pass both written and practical to get the certificate.

26. The construction department of the IVE (Tsing Yi) also offered the short course of Certificate in Plumbing Service (Hong Kong) - 56767 since 2011.

27. Due to the continuous popularity of the plumbing and pipefitting courses, the training facilities in VTC Pokfulam Complex has also been deployed to deliver the craft certificate course (PTD mode 53776) in recent years.

28. I enclose copies of the extracts of the Prospectuses for the years 1971, 1979 to1980, 1980 to 1981, 1981 to 1983, 1983 to 1984, 1986 to 1988, 1988 to 1990, 1990 to 1992, 1995 to 1997, 1998 to 1999 and 1999 to 2000 as **Annexure 9**.

29. In Hong Kong, under the Waterworks Ordinance (Cap. 102), all plumbing works except in minor nature are required to be carried out by LPs. One of the qualifications as stipulated in the Waterworks Regulations (Cap. 102A) is that any person who holds a Craft Certificate in Plumbing and Pipefitting issued by the VTC after 1987 or equivalent, plus a Certificate in Plumbing Services (Hong Kong) issued by the VTC may apply for a plumber's license. Therefore, the plumbing trade in the construction industry requires the course to satisfy the social and industrial needs.

30. The Craft Certificate in Plumbing and Pipefitting courses offered by IVE, which have long been widely recognized by both the industry and the HKSAR government as an approved training route to become LPs, or commonly referred to as the Part I requirement (i.e. a Craft Certificate in Plumbing and Pipefitting issued by the VTC after 1987, the issue date of which is within 5 years and 3 months before the date of application;

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or an equivalent qualification). Part II requirement refers to a Certificate in Plumbing Services (Hong Kong) issued by the VTC, the issue date of which is within 5 years before the date of application or an equivalent qualification. Other than the craft certificate, holders of "or equivalent qualifications" as stipulated in the website of the WSD can also apply to the Certificate in Plumbing Services (Hong Kong) to become LPs. According to the website of the WSD, the "equivalent qualifications" referred to the following:-

(1) a Plumbing Craft Certificate issued by the City and Guilds of London, the issue date of which is within 5 years before the date of application;

(2) a fellowship/membership of The Chartered Institute of Plumbing and Heating Engineering - Hong Kong Branch (formerly known as The Institute of Plumbing of the United Kingdom), the issue date of which is within 5 years before the date of application or a valid fellowship I membership card of The Chartered Institute of Plumbing and Heating Engineering of the United Kingdom at the date of application; or

(3) a Certificate in "Refresher Course on Plumbing and Pipefitting" issued by the VTC, the issue date of which is within 5 years before the date of application.

31. The plumbing and pipefitting courses offered by IVE are approved by the WSD as a pre-requisite for recognition as LPs. Graduates of the craft certificate course could be employed in construction sites or renovation companies as craftsmen in plumbing and pipefitting. After gaining adequate work experience, they could also apply to the short courses Certificate in Plumbing Services (Hong Kong) to get certificate for registration as LPs.

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Area No. 2 of the Request

32. Area No. 2 of the Request asked me to explain and describe how the curriculum of the plumbing courses and training programmes were designed and confirm whether advice from the WSD has been sought on the content of the courses and programmes.

33. Though there is no record on how the curriculum of the course Craft Certificate in Plumbing and Pipefitting was designed when it was first offered in 1969, it is believed that its contents are most probably originated from the City and Guilds of London Institute in that period, In the TI Prospectus of 1979/80, the recognition by City and Guilds was mentioned. Another possible origin of the course curriculum is from the 3-yr part-time evening course "Sanitary Engineering & Building Services" offered by the HKTC in 1965. A copy of the 1965 syllabus can be found and attached as **Annexure 10**. When this syllabus is compared with the 1970 MHTI syllabus, one can found that the learning contents on craft theory, craft science and calculations are quite similar, and, on top of that, the 1970 MHTI courses added craft practice and building construction. The course was then evolved and updated through years to meet the changing needs of the industry.

34. With the establishment of IVE in 1999, a well-documented system of programme planning, validation and review was established. The craft certificate course had then gone through the validation and re-validation process in 2001 and 2004, in which the course team (which consists of a course leader and also the instructors and teachers) reviewed the curriculum and course schemes with external inputs from major stakeholders, such as the WSD, construction companies and external examiners, etc. The course was

then defined by a comprehensive set of course documents outlining in details the curriculum structure, academic regulations, syllabi, assessment schemes, etc.

35. In addition, since 1999, there have been regular liaison meetings (formerly known as working party meetings) with the WSD to review the operation of the programme. I enclose copies of minutes of liaison meeting held in 1999, 2002, 2003, 2004, 2006, 2007, 2009, 2010, 2012, 2013 and 2014 as **Annexure 11** showing that not only the major changes in the curriculum, but also the admission requirements, graduates statistics, exemptions criteria, assessment methods, future development, etc. of the courses would be discussed at the meetings. For example, the teaching of using lead-free soldering materials was discussed in the liaison meeting held in December 2004 (see Annexure 9). Liaison meetings have also been held in October 2015. However, the minutes have not yet been ready at the time when this witness statement is submitted to the COL

36. In addition, an officer at professional grade from the WSD has been appointed to be an external examiner of the courses, who would scrutinize the examination papers and marking scripts of the courses to ensure the courses are up to standard. Other officers at professional grade from the WSD have also provided inputs to the validation and revalidation of the craft certificate courses in 2001 and 2004 as a member of the validation panel.

Area No. 3 of the Request

37. Pursuant to Area No.3 of the Request, I was asked to provide data on the number of students who took the various VTC plumbing courses and programmesduring the

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Material Period and acquired the relevant qualifications from the VTC, and describe what qualifications they have acquired.

38. I am not able to locate a comprehensive record from VTC and IVE for the whole Material Period starting from 1969. That said, from the files and records of VTC and IVE available to me, I have tried my best endeavor to compile two tables which included the number of students who took the various VTC plumbing courses and programmes. I enclose Table A as **Annexure 12** which shows the number of students who took the Craft Certificate in Plumbing and Pipefitting Course from 1978 to 2014. Data is available starting from around 1978 which was in paper form. Computer data record was available starting from around 1992. When reading the data, one has to pay particular attention that this is a 3 years course. In general, the data indicates that there was a general trend of increase in output from about 70 graduates per year in the 1980s to the present of about 108 graduates per year.

39. Table B at **Annexure 13** shows the number of annual intalces and graduates of the course Certificate in Plumbing Services (Hong Kong) from 1996 to 2014 (except 2010 which due to technical problems, the figures for year 2010 are missing). Data is available starting around 1996. This is a short course that can be completed in about four months and there are normally two cohorts of intake per year. The data indicates that there was also a general trend of increase in output from the course from about 63 graduates per year in the 1990s to about 93 graduates per year in the 201Os.

Areas Nos. 4 and 5 of the Request

40. Areas Nos. 4 and 5 of the Request asked me to confirm

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whether skilled, semi-skilled plumbers or LPs are under an obligation to attend any courses periodically to update their knowledge or skills in the trade, and if so, describe the system of continuing education and the courses available. Further, in registering or renewing their registration/licenses, confirm whether it is a condition for skilled, semi-skilled plumbers or LPs to attend accredited courses of continuing education periodically.

41. The focus of the plumbing training courses offered by VTC and IVE is to equip the students with the necessary skills and knowledge to become LPs. The registration of LPs is administrated by the WSD. To my understanding, there are no guidelines or requirements from the WSD which require the LPs to attend any courses periodically to update their knowledge or skills in the trade. Regarding the training and registration of skilled and semi-skilled workers in plumbing, it is under the ambit of Construction Industry Council (CIC), and I am not in the position to provide any comment.

Area No. 6 of the Request

42. Area No. 6 of the Request referred to the fact that from the evidence currently available, the use of copper pipes gradually became popular since around 2002, particularly in the context of public housing developments. With extensive use of copper pipes, the method of soldering for the purpose of jointing pipes was also widely adopted. VTC was asked by the COI to describe whether and if so, how the plumbing courses and programmes offered by the VTC have made corresponding changes to cater for the popular use of copper pipes and fittings in the construction and installation of the fresh water plumbing systems.

43. The learning contents of the 3-year course "Craft Certificate in Plumbing and Pipefitting" is quite comprehensive covering various aspects of a plumbing and drainage system including all types of piping materials commonly used in the industry. The topics on the usage of copper as one of the piping materials have long been covered by the course since 1969. In order to address the queries raised by the COI on the changes around 2002, I would focus on the relevant parts of the Course Schemes of 1996, 2001 and 2004, and is presented as follows:

(1) Under the topics "B. Materials for Plumbing Installation" and "E. Pipes and Valves" of the module "Craft Theory C I" at p.14 & p.15 of the 1996 Course Scheme (see Annexure 6) covered the usages and joints of pipes of various materials, including copper pipes. In addition, item 1.9 under the topic "A. Water Supply" of the module "Craft Theory C II" at p.17, required the students to "compare the advantages and disadvantages of different pipe materials ...". There was also a specific topic on "Solders and Soldering" in the module "Craft Theory C I" at p.14. The practical skill of soldering was also covered in the practical workshop of the module "Craft Practice C I" at p.2.

(2) Similar topics can be found in the 2001 Course Scheme (see Annexure 7). Under the topics "3. Materials" and "6 Pipe and Valves" of the module "Plumbing Theory I" at p.32, copper was one of the pipes materials of which its properties, usages, cutting and jointing were covered. There was also a specific topic on "Soldering" on the same page. The skill of soldering was covered in the module "Plumbing Practice I" at p.50.

(3) Similar topics can also be found in the 2004

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Course Scheme (see Annexure 8). They were included under the topics "2. Materials", "3. Pipes and Valves" and "4. Soldering" in the module "Pipe Work Installation" at p.38. The skill of soldering was covered in the module "Plumbing Practice 1(A)" at p.46.

44. When the syllabi concerning copper pipe and soldering of these three Course Schemes mentioned above were compared in detail, the following changes were observed during the intervening years from 1996 to 2004.

(1) The terms "tin-lead solder" and "lead pipes" were found in the 1996 Course Scheme and before. It was most probably inherited from its earlier versions in the 1980s or even earlier when the course was adopted from the City and Guilds of London Institute or the HKTC in 1969, and, at that time, tin-lead soldering and lead pipes were commonly used worldwide. They were later found to have been obsoleted and deleted from the 2001 and 2004 Course Schemes.

(2) Regarding the practical training on the soldering in the practical session, in the 2001 Course Scheme, the focus of the technique of soldering was for jointing metal sheets to form water tank, while that in the 2004 Course Scheme, it was clearly specified to be used for jointing copper pipes.

(3) In the 2004 Course Scheme, the module syllabus of "Pipe Work Installation" included a topic on "Chapter 10 of the Hong Kong Water Supply Standards", which stipulated that "all pipes and fittings shall comply with the version of the relevant British Standard listed out on the WSD's website."

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45. In addition to the module syllabi in the Course Schemes, which specify the objectives and indicative learning contents of each module, the instructors and teachers would develop their teaching and learning package, which includes notes, handouts, power point presentation, video, quizzes, case studies, etc. so as to facilitate their delivery of the module as specified in the syllabus. In order to ensure consistency in the delivery of the module by different instructors and teachers across different campuses, a set of teaching and learning packages (**"TLP"**) was developed in 2001. The instructors and teachers would make reference to the TLP to elaborate the subject matter, and, when necessary, supplement it by oral presentation with additional materials during the classes. The TLP distributed to the students before July 2015 was available and a copy of the part for the module "Pipe Work Installation" is attached as **Annexure 14**.

46. TLP on various piping materials are presented in Section 3 with copper pipe at p.12 of the TLP (see Annexure 14). Notes on jointing methods of various types of pipes are presented in Section 3.2 with those for copper pipes at p.17, p.21 & p.22. Soldering materials are introduced at p.39. Although its contents have not been amended to reflect the availability of lead-free soldering materials in the market at the time, I have confirmed with all the current instructors and teachers that on top of the teaching notes, they, when teaching the topic on soldering, have adopted the videos either developed by the Copper Development Center or the Housing Society to facilitate their teaching in the classroom. Copies of the video are attached as **Annexure 15**. It is clearly stated in both videos that lead-free solder should be used for potable water system. Please refer to paragraph 13 of the witness statement of Mr. Chan. In addition, I have contacted former instructors and teachers with whom we could establish contacts, Mr.

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Yu Ping Yuen and Mr. Lo Hing Wing, and they all confirmed verbally that they have taught the students that lead-free solder should be used for potable water system.

47. In addition, there was a record confirming that instructors and teachers were well-aware of the importance of using lead-free solder and have taught this to the students during the classes. Minute 8.1 of the "Working Party on Plumbing Licenses Meeting" (it was later called "Liaison Meeting on Plumbing Courses") on 22 December 2004 (see Annexure 11), recorded that "Mr. Ho (an Engineer of the WSD) concerned the lead-free soldering material in pipe connection. Mr. Yip (an Instructor of the course) informed that all students have been taught to use lead-free soldering materials in workshop practice." Mr. Leung has also confirmed this in paragraphs 17, 18 and 23 of his witness statement.

聶先生：主席，我睇到個時間，而家一點零四分。

主席：不如我哋食完飯先，好唔好？

聶先生：好呀。

主席：橫掂都有嘢問㗎嘞，跟住都。咁我哋晏晝兩點半再繼續，唔該晒。

下午1時05分聆訊押後

下午2時31分恢復聆訊

出席人士如前。

主席：繼續，Mr Nip。

聶先生：係，係，多謝主席。

<u>建業訓練局第一證人：盧永康（職業訓練局香港專業教育學院（摩理臣山）建造工程系系主任及首席講師））宣誓繼續作供</u>
<u>聶先生繼續主問</u>

問：我哋繼續由食飯之前睇到第47段，我哋而家繼續讀埋48段打後。

48. Three samples of examination papers in 1997/98, 2002/03 & 2004/05 are attached as **<u>Annexure 16</u>**. In the 2004/05 examination paper of the module "Pipe Work Installation", a multiple choice question was set to assess the students' knowledge on the composition of soldering material. There was also a short question asking the students to describe the method of jointing copper pipes by soldering. In the 2002/03 examination paper of the module "Plumbing Theory (I)", several "True-or-False" questions were set to assess whether the student know that lead is poisonous and the effect of lead on the melting point of soldering materials. There was also a question on mechanical jointing method for copper pipes. In fact long before 2002, proper soldering of copper pipes had been included in the examination as shown in the 1997/98 paper.

49. In view of the recent changes in the WSD's requirements as specified in the WSD Circular Letters 1/2015 to 8/2015, the TLP of the craft certificate course have been amended for the 2015's intakes, not only on the effect of lead in drinking water but also in enhancing the students' general awareness on the changing requirements on quality of drinking water. The revised TLP are attached to the witness statement of Mr. Chan.

50. Regarding the short course "Certificate in Plumbing Services (Hong Kong) - 56767", which is basically a

licensing examination course as described in my witness statement on the historical account of the courses, ergo there would not be specific topics in the course to teach the candidates on pipes materials and jointing methods. The 39-hr course is composed of two parts:

(1) In the "Theory" part, the latest regulations and the WSD requirements on plumbing works are reviewed by a 32-hr lecture before the 2-hr written examination. A copy of the TLP dated March 2014, is attached as **Annexure 17**. At p.38 of the TLP, the candidates were reminded to have all materials and fittings complied with relevant British Standards and the WSD's requirements. It also states that all capillary fittings for copper joints have to comply with BS864 Part 2. Though this standard has been superseded, Clause 5.2 at p.2 of BS864-2:1983 (see the attached **Annexure 18**), clearly differentiate the general usage and potable usage of solders, and lead-free solder should be used for potable water. In order to align with the latest changes in the WSD's requirements, the TLP have been updated in November 2015.

(2) In the "Practice" part, there is a 5-hr practical test on the candidates' skills on pipefitting. It covers various piping materials, including copper pipes and both mechanical joint and soldering of copper pipes has long been tested. Mr. Leung has also confirmed this in paragraph 10 of his witness statement.

Area No. 7 of the Request

51. Area No. 7 of the Request asked the VTC to confirm whether students were/are taught the different

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components (and the composition thereof) and materials used in the construction and installation of the fresh water plumbing system.

52. As mentioned in paragraphs 43 and 50 of my witness statement, the coverage of the 3-yr craft certificate course and the short course is quite comprehensive. The module syllabi in the 1996, 2001 and the current 2004 Course Schemes have long covered various components and materials used in the plumbing system as detailed in paragraphs 43(1) to 43(3) of the witness statement. Regarding the actual teaching of these topics during the lecture and practical sessions, Mr. Chan and Mr. Leung have made further elaboration in their respective witness statements.

Area No. 8 of the Request

53. Area No. 8 of the Request asked the VTC to confirm whether soldering and soldering materials used in jointing of pipes for fresh water supply were/are topics covered in the courses run by the VTC during the Material Period (i.e. from 1969 until now) and whether students were/are taught the different types and brand names of solder materials available on the market, including materials which are lead free and those which contain lead, and the differences (in components and functions) between solder wire (錫線)and solder strip (錫條).

54. Soldering has long been a topic in the syllabi of the course schemes of the craft certificate course and part of the assessment of the short course as mentioned in paragraphs 43 and 50 of my witness statement and the adjustment in focuses in this topic during the period 1996 to 2004 has also been described in paragraphs 43 and 44 of my witness statement. Regarding the actual teaching of this topic in the lecture and practical

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sessions, the witness statements of Mr. Chan and Mr. Leung would make further elaborations.

Area No. 9 of the Request

55. I was asked in Area No. 9 of the Request to confirm whether I or the VTC is/are aware of a soldering material (which is in the form of strips) by the brand name of "50力扁錫條", provide a sample of such material and describe the composition (particularly the lead content) of such material.

56. In view of the fact that I am not the responsible instructor for the plumbing and pipefitting courses offered by IVE, I have never come across or heard of the brand name of "50力扁錫條". As such, I have asked my assistant to make enquiries with the other instructors of the plumbing and pipefitting courses and was told that they have never heard of the brand name of "50力扁錫條" as well.

Areas Nos. 6, 7, 8, 10 and 11 of the Request

57. With regard to Area Nos. 6, 7, 8, 10 and 11 concerning the TLP of the plumbing and pipefitting courses, I understand that Mr. Leung and Mr. Chan will be responsible to provide responses to those areas in their respective witness statements.

Confirmation from Other Campus

58. For the information of the COI, I have also passed my witness statement and the witness statements of Mr. Leung and Mr. Chan to the heads of the construction departments of IVE (Tuen Mun) and also IVE (Tsing Yi)

namely, Ir Edmond Wong Hon-ping (黃漢平) and Ir Dr Jackson Lau Chi-keung (劉志強) for their review and comments. In view of the fact that the plumbing course and training programmes in the three campuses share the same teaching syllabuses, materials, notes and also instructors and teachers, I was told that they have no further comments on the three witness statements to be provided to the COI.

Conclusion

59. In summary, I would like to re-iterate that the topic on lead-free soldering has been covered since the late 1990s in the relevant courses provided by VTC in three separate sessions as highlighted below:

(1) In the taught module "Pipe Work Installation" (formerly "Plumbing Theory I") of the 3-yr course Craft Certificate in Plumbing and Pipefitting, the instructors have delivered the message verbally and also supplemented teaching with the aid of videos;

(2) In the practical module "Plumbing Practice I(A)" (formerly "Plumbing Practice I) of the 3-yr course Craft Certificate in Plumbing and Pipefitting, the instructors have explained the usage of various soldering materials and also demonstrated the usage of suitable materials and the proper soldering techniques; and

(3) Before registration as a LP, in the "Theory" part of the course Certificate in Plumbing Services (Hong Kong), the candidate has been further reminded that all materials used in a plumbing system, including pipes, valves, fittings, fitments, etc. should comply with the relevant WSD requirements and British Standards.

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問：盧先生，我而家就讀完咗你份供詞，我理解你就只係有幾笪地方你係想有少少嘅更正嘅啫，或者你睇番供詞第6段，喺第2頁，供詞第2頁嘅第6段，由上面數上嚟第二行嗰度，寫住"Areas 6, 7, 8, 10 and 11"，你係咪想作出一個補充更正？

答：冇錯。

問：你可唔可以講一講畀主席聽？

答："6, 7, 8"，加多個"9"，跟住"10, 11"，屘幾個topics，Mr Leung同埋--陳生同梁生都會有供詞嘅。

問：同樣地，你睇埋第57段，第21頁，嗰度都提到有"6, 7, 8, 10"同埋"11"，你都係會加番個"9"字落去？

答：冇錯。

問：請你睇去第15段，第6頁，嗰個格下面就有個reference to Apprentice Ordinance嘅，個正確嘅名稱應該係叫Apprenticeship Ordinance，係咪？

答：冇錯，係，應該改番呢個。

問：麻煩你睇第35段，第13頁，喺第35段嗰度，由屘數上嚟第四行就有個係講到"Annexure 9"嘅，嗰個正確嘅秣巴應該係"Annexure 11"，係咪呀？

答：冇錯，11，應該係。

問：除咗我頭先講嗰啲更正之外，你喺呢份供詞所講嘅嘢都係真實同埋準確，係咪呀？

答：冇錯，真實。

問：你願唔願意採納呢份供詞作為你喺呢個聆訊嘅證供？

答：願意。

問：我只係有少少嘅補充嘅問題想問一問你嘅啫。請你揭去第47段，你嘅供詞第47段，第18頁，你呢度就講到--有提及過一個Minute 8.1

嘅，就係一啲叫做"Liaison Working Party Meeting"，我叫佢做聯絡嘅會議，你提過有 Annexure 11，我想你睇一睇 Annexure 11。

聶先生：可唔可以麻煩畀 Annexure 11 畀盧先生睇一睇？

主席：第幾頁？

聶先生：我想盧先生睇嘅係喺 Annexure 11 嘅 2004 年嗰個 minutes。

主席：有冇講第幾頁？我哋 paginated 嘅第幾頁？冇嘅，係咪呀？

聶先生：主席，因為我冇嗰個 paginated 嘅...

講者（不能辨別）：482。

聶先生：唔該。第 482。

主席：唔該。

問：2004 年 12 月嘅會議紀錄，盧先生，你搵到嘛？

答：搵到。

問：你喺證人供詞提過嘅 8.1 就應該喺呢一份嘅會議紀錄第 3 頁嗰度就搵到嘅，你搵唔搵到？

答：搵到。

問：呢度正如你喺個證人供詞都提過，即係呢度就提過就係話 Mr Yip，即係你哋嘅導師，就叫啲學生就係叫佢哋用一啲無鉛嘅焊料嘅物質嘅。

答：唔，冇錯。

問：喺呢個 8.1 提到呢樣嘢，喺之後嗰啲會有冇跟進？

答：有嘅，其實呢個 8.1 當時係水務局嘅一個工程師 Mr Ho 提出嘅，佢問我哋啲導師教 soldering 嗰陣時有冇提佢哋用 lead-free

soldering，喺呢個會度提咗之後，跟住喺下一個會亦都有跟進嘅其實，大家可以搣去...

問：應該就係2006年嗰份，就係下一頁嘅啫。

答：係，冇錯。

問：你就會提到2006年3月8號嘅會議紀錄。

主席：第幾頁話？對唔住，跟住嗰頁？

聶先生：483頁，主席。

主席：唔該。

問:如果你睇第484頁,盧先生,你睇唔睇到嗰度有冇紀錄番係點樣跟進？

答：Okay，係，...

問：483。

答：...應該係483.1頁。

問：哦，okay。

答:483.1頁,嗰個meeting minutes嘅2.2嗰點,嗰度有個"Re:8.1"嘅,其實即係話refer上一次嘅meeting minutes 8.1個clause嘅，上次嘅meeting minutes 8.1就係呢個何工程師就問我哋葉榮標（譯音）有冇教無鉛嘅--即係提醒啲學生用無鉛嘅soldering materials，下一次會議就係呢一頁，葉榮標繼續再報告多一樣嘢嘅，就係其實當時嘅老師亦都aware到應該有啲方法去測試嗰啲soldering materials有冇鉛嘅，佢哋亦都喺坊間亦都嘗試過去搵，係搵唔到，於是乎就喺呢個會議嗰度就問水務局嘅工程師何先生，可唔可以幫佢哋去嘗試搵下相關嘅測試材料嘅，當時嘅何先生就話就試下喺英國嘅網站上面睇下可唔可以搵到相關嘅測試材料嘅。

問：我理解之後仲有一次跟進嘅，...

答：冇錯，係。

問：...第486頁，第2.1段嗰度，係咪呀？

答：係，冇錯，亦跟番上一次嘅會議紀錄2.2，又有一個跟進嘅，呢度，當時水務局嘅工程師就返番嚟匯報，就話就佢搜索過，亦都搵唔到相關嘅 testing method，葉榮標當時亦都再重新講一次，就係我哋嘅教材喺課堂上面亦都講得好清楚畀啲學生知其實要用無鉛嘅材料嘅。

問：唔該晒盧先生。

聶先生：主席，我冇其他問題。

主席：唔該。Mr Khaw。

許偉強先生盤問

問：盧先生，就番啱啱最後嗰一點，就有關你哋當時喺嗰個大家嗰個working party嗰度傾過關於含鉛或者不含鉛嗰個討論，如果我哋睇番482頁，當時就大家討論，就有位何先生，即係應該係水務署嘅代表。

答：冇錯。

問：如果我哋睇番480頁有個成員嗰個名單嘅，何先生就應該係水務署個engineer嚟嘅，係咪呀？

答：冇錯，冇錯。

問：其中亦都包括咗你哋VTC入面嘅成員喇？

答：冇錯。

問：嗰位葉先生就應該係你哋VTC應該就係屯門，係咪呀？

答：冇錯。

問：屯門嗰個 construction 個 department 入面個 assistant lecturer 嚟嘅，係咪呀？

答：冇錯。

問：佢嗰度當時個回應就話"all students have been taught to use lead-free soldering material in workshop practice. Catalogues would be sent to WSD for information."，嗰個 catalogues 當時係講啲乜嘢 catalogue？我想知道。

答：憑呢個字面估計，我都係，應該係講嗰啲 soldering materials catalogues，我亦都就住呢樣嘢，亦都問過當時嘅與會一啲同事，咁好多都退咗休㗎喇。其實事後亦都冇呢啲 catalogues，已經搵唔到呢啲 catalogues。

問：所以後面啲紀錄就我哋睇唔到話...

答：就冇再提到喇，係喇。

問：...好似交代番個 catalogue 嗰件事，係咪呀？

答：冇錯，係喇。

問：就住呢一個當時水務署代表嗰個疑問，即係關於係咪真係用 lead-free soldering material，我想知道喺及後個會，即係我哋見到有兩個會，啱啱你代表律師都同你睇過，就係 06 年 3 月 8 號嗰個會，喺 483.1，同埋就 486 頁就交代番。

我哋睇下 483.1 嗰度，佢就咁講，就話"Mr Yip reported that on-site testing method of lead soldering material in pipe connection has been thoroughly searched."，"no such method could be found in the current HK market."咁樣。

我想知道就係當時水務署嘅代表提出咗呢一點疑問，你哋有冇話即係例如搵番你哋過往例如啲課程嗰啲紀錄，睇下有冇就住呢方面，即係個教材嗰方面，同學生講解嗰方面，有冇特別提到呢一點？

答：第一次水務局提出呢個疑問就係 2004 年嘅，2004 年嗰陣時嗰啲老師就 confirm 咗就話教咗啲學生用無鉛嘅材料，係咪？

問：係。

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答：你嘅問題係咪問「喺 2004 年之前係咪有咁做法呢？」係咪？呢個亦都冇呢個紀錄嘅，我只可以唯一答你，就係因為因應我要寫呢一個口供紙嘅關係，我亦都打電話問咗一啲退咗休嘅同事，佢喺 2004 年之前都有份教嘅，嗰啲同事好清晰咁話畀我知其實喺堂上面好清晰話咗畀學生知係要用啲無鉛嘅材料嘅。

問：好，我就嗰方面嗰啲細節，我會再晏少少再同你問一問。

答：好。

問：我首先想有啲背景資料想搞清楚先，我睇到你個口供嗰度講，就我想確認番，你而家係咪都仲係 IVE 嗰個 head of construction department？

答：冇錯。

問：現在都仲係㗎呵。另外你又提過你喺 2015 年就開始就有參與嗰個 Advisory Board of Licensing of Plumbers 嘅。

答：冇錯。

問：嗰個應該係個諮詢個會嚟嘅。

答：冇錯。

問：任期應該係兩年，所以你應該而家都仲係其中一位成員嚟嘅，係咪呀？

答：冇錯。

問：我知道呢個諮詢嗰個會或者嗰個係叫個 board 喇，應該就係？

答：唔，唔，唔。

問：應該個成員都除咗 VTC，即係你本人，係咪都係有水喉業嘅代表？

答：係，冇錯。

問：另外都有專業人士，係咪呀？

答：冇錯。

問：亦都有總承建商嗰方面嘅代表，係咪呀？

答：冇錯。

問：亦都有物業管理嗰方面嘅代表都有嘛？

答：冇錯。

問：而嗰個 board 嘅主席係咪水務署嘅代表嚟㗎？

答：唔係。

問：係邊一面嘅代表嚟？個主席係從事邊一個行業㗎？梁先生，Edmund Leung。

答：應該係喺建造行業一個相當資深嘅一個專業人士。

問：都係建造行業嘅？

答：係。

問：好，唔該你。幾耐開一次會，呢一個 Advisory Board of Licensing of Plumbers？

答：就 9 月開咗第一次會，至於下一次幾時開，就應該係 on need basis 嘅。

問：即係冇定話幾耐開一次咁嘅，係咪呀？

答：冇嘅。

問：我想知道 9 月你哋開會嘅時候，應該都係鉛水事件曝咗光之後喇？

答：冇錯。

問：我想問下 9 月開會嘅時候，有冇話特別就住嗰個持牌水喉匠嗰個發牌嘅制度去到傾過任何嘅事情？

答：有。

問：可唔可以講一講？

答：係，就因為裏頭所講嘅內容屬於 confidential，但係有一部分嘅已經係其實都公眾都知㗎喇，其中包括就係嗰個扣分制度，嗰個 license --嗰個叫做 penalty point system，自 1980 年中開

始沿用嘅，就係對持牌水喉匠嗰個工作嗰個質素，如果佢喺嗰年做得有啲地方違反呢個水務條例，要扣分嘅，扣到係多過 10 分嘅話，就出 warning letter，兩個 warning letter 就要除牌咁樣樣嘅。

當日亦都有討論過嗰個扣分制度係需要加緊嘅，事實上後期亦都出咗 circular letter。除此之外，亦都有講過就係而家亦都開始一路檢討當中嘅，事實上就係我哋其中啲課程上面會有啲所謂叫增加內容。

問：例如喺邊方面係需要增加？

答：其中一方面就係關於管理嘅，而家持牌水喉匠嘅課程有兩部分，一部分就係 craft certificate course，嗰個最主要係教識嗰個 craft skill，hands-on skill，當中亦都有一個單元都有同管理相關嘅，叫 construction technologies，有講地盤管理、地盤架構嘅，但係佢儲咗四年工作經驗之後再嚟讀呢一個考牌嗰個短期課程嘅時候，佢讀完呢個--佢考完呢個短期課程嘅試之後，應該就可以成為呢個持牌水喉匠。

但係佢個工作--因為喺當時嘅討論之中，都察覺一樣嘢，持牌水喉匠同幾十年前立例嗰陣時嘅持牌水喉匠嗰個工作嘅性質亦都改變咗好多，因為個 building works 越嚟越複雜，同埋要牽涉嘅人手亦都相當多，持牌水喉匠好多時都會牽涉到做啲 supervisory 同埋 management 嘅工作，於是乎我哋就希望喺個課程上面，喺個訓練上面亦都加番呢一部分嘅元素喺度嚟，咁...

問：明白，即係總括嚟講，就係業界可能覺得需要加強持牌水喉匠...

答：管理。

問：...對於即係話監督喺嗰個地盤嗰個工作過程可能需要更加多嘅認識，係咪呀？

答：冇錯，係。

問：好。除咗呢幾方面之外，仲有冇其他討論過嘅課題喺個 advisory board 嗰度，關於嗰個持牌水喉匠嘅制度？

答：亦都討論過就係關於持牌水喉匠續牌嘅時候需唔需要進行呢一個 continuous professional development。

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問：明白。

答：所謂叫做持續進修。當時 advisory board 係 recommendation 畀咗水務局嘅，事實上水務局亦都跟進，亦都同我哋商討過相關嘅事情嘅，同 VTC 商討過。

問：你即係話初步嘅討論都係有呢個需要，係咪呀？

答：冇錯。

問：我想問一問你，就係我見到你個證人供詞都好詳細咁樣講咗不同年份嗰啲咁嘅課程，入面你亦都係提出咗，亦都呈交咗嗰啲課程嗰啲嘅單張或者簡介，我想問一問，就係你對嗰個持牌水喉匠嗰個發牌制度，就喺嗰個水務規則嗰度所講嗰啲條例，你都會有一定嘅認識，係咪呀？

答：唔。

問：我想或者我哋都睇一睇有一--因為嗰個法例改過嘅，我想都同你睇一睇，即係前後有少少唔同。

答：好。

問：我哋首先睇一睇現在嗰個--現行個法例，喺 G1 嗰度，284 頁，我哋先可以睇咗 283 先都得，呢個就係現行嘅法例，我哋睇下 33 條，見到嘛？

答：係。

問：盧生，佢呢度就話"Any person who -- (a) holds a Craft Certificate"，即係剛才你講嗰個 craft certificate，即係先要讀嗰個課程嘅？

答：冇錯。

問：就"in plumbing and pipefitting issued by" VTC，(c)，跟住就話"holds an equivalent qualification"，另外仲有一個附加條件嘅，我諗係你嘅口供入面所講嗰個 short course。

答：冇錯。

問：即係個短期課程，就"and who holds a Certificate in Plumbing

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Services"都係 issued by VTC，或者係一個 equivalent 嘅 qualification,就可以申請做呢個持牌水喉匠咁樣,咁亦都係話如果你要申請嗰個時候，你個資格一定要係大概五年之前取得嘅，...

答：冇錯。

問：...如果太早期嗰啲就未必得㗎喇。

答：唔。

問：如果我哋睇下一個舊少少版本嘅法例，我想了解下之前嗰個情況，舊少少版本嘅法例喺 A3 2520，如果我哋喺 A3 --如果我哋由 2519 最下面嗰度開始睇，"Any person who -- (a) holds a certificate from"，"Institute of Plumbing"或者係呢個"Registered Plumbers Association"，跟住就係可以講出--即係如果你要讀啲課程，需要邊啲嘅，其中一個就係我哋見到係摩理臣山 Technical Institute 嘅課程嚟嘅，呢個我哋知道就係 1989 年之前嗰個條件就係咁樣嘅。

我就想問一問，就係如果我哋睇番你嘅證人口供第 14 段，第 14 段裏面所講，有一個-- 14 段嗰度介紹就應該係 80 年代初期，...

答：冇錯。

問：...就有幾個"Craft Studies in Plumbing"、"Plumbing and Pipe-fitting"等等,即係 266 同埋 286,呢兩個數目字都緊要嘅，因為之後我可能會再同你睇下啲其他文件，睇下 266 同埋 286 喇。另外我哋見到--然後就第 15 段就講出 1981 至 83 年就有另外多一個課程。

答：冇錯。

問：就一個 276 嘅。就我想問一問，就係當年有呢啲課程，呢啲課程有啲為期一年，有啲為期三年咁樣嘅，我想知道係咪一定要係讀其中一個，係咪就已經可以去申請做呢個持牌水喉匠嘅資格，當時？

答：當時嚟講係點樣樣，我冇法子答到你，因為呢條法例我都係第一次見到。

問：Okay，好。

答：唔好意思。

問：得，唔緊要。

答：即係我只可以就VTC嗰個課程嘅計設，一般我認識去答。課程個設計，一般嚟講，有唔同嘅mode of studies嘅，你見到0266同0286其實嗰個difference係個mode of studies，0266係一個part-time day release嘅課程，你見到個abbreviation "PTDR"。0286就係"PTE"，就係夜間嘅課程。雖然唔同個mode of studies，但係嗰個award，個award，個title award係一樣嘅，都應該叫做craft certificate in the plumbing and pipefitting嘅。包括呢一個0276，嗰個亦都係一個part-time day release嘅課程。

問：如果我咁樣理解啱唔啱呢，例如睇第14段咁講，入面266佢係一年嘅課程嚟嘅，就part-time day release嘅課程，另外有一個就係三年嘅evening嘅課程。

答：冇錯。

問：呢兩個課程取得嗰個資格嗰個--即係我哋所講嘅ranking係咪都應該係類同㗎？

答：當年嘅社會嗰個證書係點樣樣，我冇法子考究，但係根據現時VTC嘅做法，就係就算唔同mode of studies，個course code唔同都好，如果嗰個programme title一樣，基本上個award嗰張證書嘅title係一樣嘅，佢裏頭亦都唔會寫究竟你係屬於乜嘢mode of studies嘅。

問：明白，明白。好喇，如果我哋睇番你喺第17段所講，第17段就係講緊82至85年嗰個情況嘅，亦都係有266同埋286。

答：冇錯。

問：呢兩個都係為期三年嘅課程嚟嘅。

答：冇錯。

問：都係part-time嘅，呢兩個都係我哋講緊取得個資格都係等同嘅，都係個certificate of --即係個crafting certificate個資格嚟嘅，係咪呀？

答：冇錯。

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問：我哋知道跟住1992年左右就有少少轉變，因為水務署--你都有提過嘅，...

答：冇錯，係。

問：...水務署出咗個circular，就應該係--我諗當時都因應住可能個法例有少少唔同咗，佢哋亦都出咗個 circular。我哋睇一睇個circular，喺57頁。

答：得。

問：好，57頁就呢度就講，(i)就係話現行嗰個"examination system for licensing of plumbers will be abandoned on" 1993年10月2號，跟住以後就所有嘅申請做持牌水喉匠嘅人都需要取得呢啲咁嘅資格。首先，我哋如果睇(a)嘅，嗰個"Craft Certificate in Plumbing and Pipefitting Course"，266、286，都係我哋啱啱睇嗰啲嚟嘅。

答：冇錯。

問：即係由1970年後期到1980嗰陣時都已經開始一路都有㗎喇，都係呢個course嚟嘅，係咪呀？

答：都用緊呢個course code㗎喇，係。

問：呢個就冇乜點轉變嘅，不過佢就話係需要係issued by個VTC after 1987。

答：唔，冇錯。

問：即係亦都係五年嗰個期限，我相信佢呢度都係講緊，因為呢個係1992年嘅circular，佢都想係講番近期啲嘅craft certificate。另外(a)、(b)、(c)，(b)、(c)我哋暫且而家唔好理佢住，如果睇下(d)嗰度就係講緊個"Certificate in Plumbing Services (Hong Kong) Course (course 5267)"，呢度就多咗個"5267"個冧巴出嚟。

答：冇錯。

問：咁issued by個Vocational Training Council，喺你嘅口供都講咗有關呢個short course。

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答：冇錯。

問：我而家想睇一睇嗰個課程嗰個轉變，我個理解啱唔啱，首先我哋睇一睇嗰個 266 嗰個課程，如果我哋睇一睇個課程個內容，第 67 頁，呢個就係我哋講緊 266 嗰個課程，亦都適用於 286 嘅，即係呢個就係嗰個 circular 入面講第一步係要攞到個 craft certificate 嗰個課程喇？

答：唔。

問：我見到呢個就係 1996 年 6 月個版本嚟嘅，呢個。

答：冇錯。

問:我對番日子,應該都係盧先生加入 VTC 咁上下嗰個時間嘅應該係,1996 年。

答：冇錯。

問：我想問一問呢個--即係個課程嘅制訂，通常係咪你哋都係你哋 VTC 去做吖，定係會有業界人士都畀啲意見做呢個課程？

答：就咁樣，1996 年嗰個年代就 VTC 底下有兩--即係嗰個教育機構，就除咗 technical institutes，摩理臣山亦都係其中一間之外，另外一間叫 technical college，成立咗兩間 technical college 嘅，我當時係加入去 technical college，就唔係 technical institute。

問：明白。

答：1999 年之後就 technical institute 同 technical college 就合併，變成而家嘅 IVE。Technical college 同埋 IVE 嗰個課程嘅制訂我就相當熟悉，但係 technical institute，即係 1999 年之前嗰啲工業學院，technical institute 嗰個課程嘅制度我係唔清楚嘅，呢個我要講明先。

如果你要我去揣測佢當時課程嘅制訂係點樣樣，我只可以憑住我對 TC 同 IVE 嗰個制度去作呢個答案嘅啫。根據 technical college，甚至而家 IVE 嗰個制度，制訂一個課程，一個新嘅課程尤其是，首先要做一個所謂叫 feasibility studies，一個可行性研究，做呢個可行性研究嘅時候，其實係包括咗係要對業界啲諮詢，

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就係究竟要學啲乜嘢，主要嘅 stakeholders，都要作出諮詢嘅，同埋嗰個市場上面究竟有幾多人需要讀呢啲課程，都要作出研究嘅。

問：明白，即係你哋...

答：咁如果...

問：唔好意思，繼續。

答：如果呢個可行性發覺係 okay 嘅話，得到管理層嘅批准，跟住就進入第二部分，就係設計個課程。

喺設計個課程，我哋會成立一個叫課程委員會，會去設計呢個課程，咁就將嗰個課程嘅所有嘅單元嘅 syllabus，要學啲咩嘢寫晒出嚟，不但只，亦都會將嗰個考試--個所謂嘅評核嘅要求究竟係點樣樣、考試嘅制度係點樣樣，例如有冇得補考、最多補考幾多科諸如此類，我哋所謂叫 academic regulations，亦都會編寫晒出嚟嘅。

好喇，完成咗呢個步驟之後，跟住仲有一個步驟要做嘅，亦都要得到課程委員會嘅批准，跟住仲有一個步驟要做，所謂叫 validation。Validation 就係 form 一個 panel，一個獨立嘅 panel，獨立於嗰個課程設計嗰個課程委員會嘅，就裏頭包含咗一啲校內其他部門、其他學系嘅同事，仲有校外嘅，例如相關啲 stakeholders 嘅代表喺度，再審核個課程，如果發覺 okay，我哋先至會正式 launch 嘅。

問：明白，或者我哋停一停，講緊個 validation 呢個 point 先。

答：冇錯。

問：我想知道就係嗰個--我知道你哋喺嗰啲業界，即係同水務署嗰啲 working party 嗰啲討論入面都有提過例如你啲 course 嘅 validation 嘅問題嘅。

答：冇錯。

問：我想知道例如你每個 course 係幾耐要 validate 一次吖，定係因應唔同時候嘅需要，先至作出呢個 validation？

答：好似呢個課程咁樣樣，1999 年 IVE 成立咗之後，於是乎早期喺 TI 嘅課程，如果繼續要延續嘅話，我哋要做 validation，所有呢個課程喺 2000 年就-- 2001 年應該係，2001 年做咗一次 validation。

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問：如果我哋睇番文件嘅473頁，如果我哋睇番3.3嗰個point，呢個就係應該係1999年嗰個會議嚟嘅，3.3嗰度提到就係啲286同埋266就需要"re-validated before summer 2000 for the implementation of the new IVE courses"，呢個就係你剛才提到嗰一點？

答：冇錯，係。

問：如果我哋睇番呢個課程先，嗰個內容，如果我哋睇番第67頁。

答：67？

問：睇到嘛，67？

答：Okay。

問：67頁就係講緊呢一個都有關一啲common hand tools，即係你所講，...

答：係，冇錯。

問：...同埋一啲craft techniques嘅，我哋見到67頁B嗰度，佢有講soldering，睇到嘛？

答：冇錯。

問："SOLDERING"，佢就話"Understands the procedures of soldering.

2.1. Identifies the lead-tin solders.

2.2. Identifies the melting temperatures of lead-tin solders.

2.3. Identifies the uses of fluxes for soldering.

2.4. Joints copper bit work with solders."

第一，我想知道就係呢一個課程嗰個內容，你有冇參與編制？

答：冇，呢個。

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問：就住例如呢一個 module，即係呢一個特別個課題，呢啲咁嘅關於 soldering 嘅嘢，你本人有冇負責教導？

答：冇。

問：冇嘅，好。例如呢個課程咁，你有冇負責教過呢個課程？

答：冇。

問：都冇嘅，好。就住呢度，因為我哋見到佢講 solders，或者我哋亦都再睇一睇後面有一度，就係講緊 70 頁。

答：70 頁。

問：70 頁就有講過關於啲 pipe connection 嘅，即係講啲 installation of pipes、用啲咩嘢 materials，然後到 79 頁，都有啲關係嘅，就係講緊"MATERIALS FOR PLUMBING INSTALLATION"。

答：係，冇錯。

問：就有啲"main materials for plumbing installation"，入面有啲乜嘢，都講出咗唔同嘅物料。我想知一知就係如果你本人嚟講，對話使用無鉛嗰啲 solder，即係我哋所講個焊料嚟講，你個人，即係我哋講緊呢個鉛水事件曝光之前，即係舊年 2015 年嘅 7 月之前，你自己有冇認識，對呢樣嘢？

答：冇。

問：冇嘅？

答：係。

問：完全冇接觸過？

答：因為我冇參與呢個課程，喺嗰個年代，係喇。

問：冇接觸過，係咪呀？

答：係喇。

問：好，你對於嗰個銅喉接駁嗰方面，你自己有冇認識㗎？

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答：呢件事之後就認識。

問：之前都冇嘅？

答：冇認識...

問：都冇？

答：你話冇認識，完全唔可以咁講嘅，因為我加入 VTC 之前都喺出面做過嘅，你問喺個年代有冇用銅喉，嗰個年代係有用銅喉嘅，最主要係用喺熱水喉度，同埋一啲較為高級嘅樓宇裏頭。

問：但係對於接駁，例如用啲咩嘢物料嗰方面，你就冇乜特別嘅認識？

答：就唔係好詳細咁知，係喇。

問：就住例如水務規則入面所講啲部件、物料需要符合英國標準呢樣嘢，你之前知唔知道？

答：之前都知嘅，喺出面做嘢嗰陣時都知嘅，因為喺一般嘅屋宇發展嘅時候，我哋都要填嗰啲咩嘢 WWO46、046、咩嘢 132 嗰啲，我哋都要做嘅。

問：但係就對於話焊料嗰方面，點樣去符合英國標準呢樣嘢，你知唔知？

答：就唔會話好 focus 去留意呢樣嘢，當年，係喇。

問：Okay，okay，明白。即係知道有呢個英國標準呢一個咁嘅準則？

答：冇錯，係。

問：但係對於你話就住例如銅喉嘅物料，特別係需要用啲乜嘢先可以符合英國標準嘅，...

答：冇錯。

問：...呢樣嘢你話你就之前冇乜考究？

答：Okay，冇錯。

問：好，或者我哋...

答：但係我有樣嘢想回應一下嘅，就住呢一個 course document，你頭

先所引用嗰個 course document 就係 1996 年嘅。

問：96 年，係，冇錯。

答：你見到你就 identify --你就 pinpoint 咗幾個--呢一版，係咪？

問：係。

答：關於 soldering，你見到你就讀咗出嚟，"identify the lead-tin solders"，係咪？

問：係，冇錯。

答：呢個當時我哋搵到最早期嘅一個較為 comprehensive 嘅 course document，事實上去到 2001 年 IVE 成立咗之後，做第一次嘅 validation 嗰陣時候個 course document，你見到裏頭嘅內容亦都作出咗改動嘅。

問：係，我見到。

答：去到 2004 年嗰陣時，個 course document 亦都有啲改動嘅，...

問：或者我哋睇一睇 2001 年嗰個 course document 嘅改動。

答：好呀。

問：2001 年就...

答：係第幾版？

問：2001 年，我哋就可以睇番呢一個係一百六--睇下先，如果我哋睇下 166 頁。

答：冇錯，你見到第 166 頁嘅"Soldering"，都同樣係"Describe the procedures of soldering"，但係當年更改呢一個 course scheme 嘅同事亦都將"tin-lead solder"係刪除咗㗎喇已經。

問：184，我哋又睇一睇。

答：係喇，184...

問：嗰度都係講緊即係如果...

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答：呢個都係 Plumbing Theory I，你見到個"Soldering"嗰度亦都冇再提呢一個 tin-lead soldering。

問：可唔可以講一講點解會有咁嘅轉變？

答：當時點解作出呢個轉變，因為我亦都唔在場，冇法子去搵到啲實質嘅證據話畀你知點做，惟有就係估計嘅啫，即係作出一個咁重大嘅改變，突然之間個 syllabus 少咗兩個字，我估計當時嘅同事應該都為意到嗰個問題喺邊度，即係最早期 1996 個 syllabus。你亦都你見到 2004 年嗰個 course document，其實 2004 個 course document 亦都反映出 2004 年同水務局會議，當年其實嗰啲老師係好 aware 呢樣嘢嘅。

問：如果我哋睇番 2004 年嗰個 document，喺 316 頁。

答：316。

問：講緊"soldering"嗰度，...

答：係，冇錯。

問：...其實就佢個字眼上同啱啱 2001 年嗰個就冇咩嘢大分別嘅，係咪呀？

答：冇錯，係，係。

問：即係你都係講緊係話冇咗個"tin-lead solder"呢樣嘢啫。

答：係，冇錯。即係其實喺 2004 年嗰陣時候，當時嘅 technical institutes 嘅老師都相當 aware 呢樣嘢，亦都即刻改咗個 syllabus。

問：但係因為你自己就冇參與到呢個 syllabus 嘅改動，就即係你而家係睇番嗰個文件，就諗番...

答：係喇，判斷，係喇。

問：...就應該可能係呢一個轉變喇？

答：係喇，即係幾樣嘢，你見到就係呢個 syllabus 上面嘅改動，個會議紀錄亦都有提到，不但只如此，就係我嘅口供紙都講，就係考試題目喺 1997 年嗰陣時亦都開始就考相關嘅內容㗎喇。

主席：199 --對唔住，係199咩嘢話？7？

答：應該係1997，如果冇記錯，我要睇一睇先，唔好意思。

主席：你睇一睇。

答：冇錯，1997，你睇番呢一個page 571頁。

主席：571，好。

答：Annex 16，page 571頁，1997年嘅考試題目，你撥去後一版，573頁，第12條嘅multiple choice，嗰度係問錫焊當中，焊料主要嘅成分係啲咩嘢嘅，你見到有幾個選擇畀個學生揀嘅，第一個就係「錫和鋅」，第二個就係「錫和銅」，第三個就係「錫和鐵」，仲有第四個係「錫和鉛」，真正嘅答案就係(b)，就係「錫和銅」，而唔係(d)。不但只如此，你見到第18條，講錫焊嗰個熔點亦都有講。

主席：個答案係(a)？

答：呢個我就搵唔到。好喇，你再撥後一版，就係下一年嘅題目，2002年，你見到有true and false嘅，true and false嘅第4條個問題，你見到就係鉛嗰個特性亦都講咗出嚟嘅，問學生認唔認知嘅見到，呢個好明顯係false，係咪？係true --睇下先，有毒，啱，係true嘅呢個應該，呢度後面有個答案嘅，應該係。熔點低同埋係有毒嘅，鉛係。

好喇，第8條個true and false，你都會見到，如果焊料加咗鉛對嗰個熔點嘅影響，都有問嘅其實，所以其實當時嘅老師對soldering嘅materials如果含鉛，係相當緊張，其實佢哋，所以喺考試裏頭亦都加入咗相關嘅試題。

問：如果我哋睇番嗰個你剛才講過一點，就係話可能2004年或者2001年嗰個課程上面冇咗嗰個"tin-lead solder"...

答：冇咗個字。

問：...就可能同嗰個當時喺你哋個working party嗰個會議度嗰個有關嘅，但係我睇一睇個日期，我就想問一問你會唔會--其實可能未必

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一定係咁嘅情況，我哋如果睇下482頁。

答：即係我講過係有關嘅意思就係其實喺嗰段時間，不但只水務局官員，其實同事，即係由呢幾件事可以了解到，就係當時嘅同事係相當aware呢件事情嘅，即係soldering裏頭嗰個含鉛與否，佢哋相當aware嘅。

問：好，不如我哋睇一睇482頁嗰度，就係剛才你代表律師都有同你討論過嘅，就係講--呢個就係2004年12月...

答：冇錯。

問：...尾，12月22號嘅所提出嘅，呢個就係講緊何先生，水務署嘅，...

答：冇錯，係。

問：...就講番話佢關注呢個lead-free solder material呢個問題，我想問下你，你而家嘅講法係咪即係話其實喺呢個會議之前都已經有就住呢個問題有討論，定係呢個會係第一次--以你嘅認知，第一次大家喺同呢個水務署個商討嘅時候先至係討論呢個lead-free solder material呢樣嘢嘅？

答：因為一樣，我唔喺現場，喺嗰個年代，我都冇法子答到呢個問題，我只係由文件上面顯示佢哋係有討論過。

問：係，明白，好。如果我哋睇番...

主席：我想問一問，對唔住，就係你講到2001年就同1996年嗰個--唔係，我哋見到2001年就有個改變，即係...

答：係喇，冇錯，係喇。

主席：...舊嗰個就係199...

答：6。

主席：...6年，我想問一問啫，因為我哋知道就係2000年嘅年頭就發生咗一啲事嘅，所以就呢個含鉛嗰啲solder係一個issue嚟嘅，喺嗰個年代，我想知道1996年又有啲乜嘢特別嘅原因？就你所知，因為你見到話譬如你嗰啲考試卷96年就已經開始--96、97已經改，

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2000 -- 2001年之後我明--我估計係因為有啲事發生，1996你又知唔知，有冇就呢方面查詢過、研究過？

答：我諗我答唔到你問題，唔好意思。

主席：得，唔緊要，答唔到唔緊要。

問：好，或者我呢度跟進番少少，就係如果我哋睇番你個證人口供嘅第21頁第45段，嗰度你就提出咗即係話除咗啲課程嘅講義之外，都仲有一啲係你哋所講嘅teaching and learning package嘅，TLP，當時就應該二零零--你講嗰個就喺2001年就即係最初制訂咗嘅，係咪？

答：冇錯。

問：你亦都喺嗰個 annex 14 就入面有提交到畀我哋，就係有關呢一個TLP嘅文件嚟嘅。

答：冇錯。

問：我想知道，首先我想睇一睇就係呢一個--因為你講過，喺你嘅45段嗰度就講到話呢個TLP就developed in 2001。

答：冇錯。

問：但係跟住我哋都知道，因為水務署喺2015年發出咗新嘅指引之後，啲教材修訂過嘅。

答：冇錯，係。

問：我就想問一問，喺你個annexure 14，即係517頁。

答：517頁。

問：呢一個係咪應該係最初步2001年嗰陣時個版本嚟㗎？

答：Okay，517頁嗰版就唔係2001年嘅版本，應該係2004年嘅版本。

問：2004年嘅版本。

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答：照我嘅認知，就應該係2004年沿用到呢個2014年...

問：14，係咪呀？

答：...7月㗎喇，當中可能有啲嘢改咗，我就唔係好清楚。

問：明白，好。或者我哋睇一睇呢一個2004年嘅版本入面講嗰啲錫焊接合，喺563頁，4.1嗰度，...

答：係，冇錯。

問：...呢度嗰個TLP係咁講嘅，就話「銲料由鉛及錫混合而成，有部份銲料還加進少許」呢個係咪「替」？我有...

答：銻嚟嘅應該。

問：銻，係，有邊讀邊。「在高溫下銲料可將金屬接合一起。」跟住呢度就有refer to個BS standard嘅，應該係個British Standard，「把銲料分為三級」，呢個2004嘅版本就有三級，就A級，成份就係鉛34個per cent、錫65個per cent、銻就係1個per cent。B級就係鉛48個per cent、錫50個per cent、銻就2個per cent。C級鉛68個per cent、錫30個per cent，銻2個per cent嘅。

我就咁睇，喺2004呢一個教材裏面，就冇好似話特別將嗰個焊料係無鉛呢樣嘢就寫出嚟，似乎講緊呢三個級別嘅焊料都係含鉛嘅焊料嚟，係咪呀？

答：唔。

問：係咪當時仲未係話--喺2004嗰個版本度其實都未係話好清晰地將呢個無鉛焊料呢樣嘢特別咁樣界定出嚟嘅，睇文件似乎係咁樣，係咪呀？

主席：唔係，唔係，唔係，因為你要睇佢個用途，呢個，係咪呀？

答：係，冇錯，係。就住呢一個teaching notes，即係我第一次見到都有同你一個咁嘅疑問嘅，我亦都同相關嘅老師傾過，亦都搵咗啲退咗休嘅老師當時教呢一版嗰陣時究竟係點樣樣嘅，我嘅得知，我認知就係咁樣樣嘅，呢一份notes沿用咗好多年，喺好早期已經用，當

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時 soldering 嘅使用就唔係喺 potable water pipe 上面，喺早期，亦都因為嗰啲叫白鐵嘅，愛嚟接一啲水箱或者做一啲 AC pipe 嘅 connection，係會用呢啲 soldering 嘅。

問：即係冷氣喉嗰啲？

答：係喇，呢份 notes 就沿用咗好多年，繼續沿用落嚟嘅，但係去到 1990 年代尾嗰陣時候，嗰啲老師因為開始都 aware 到喺食水上面係做 soldering 嘅時候就應該要用無鉛嘅 soldering materials 嘅，所以佢哋教到呢一部分嗰陣時候，其實佢哋喺佢哋嘅 delivery 嘅過程之中，亦都會好強調一樣嘢，其實呢啲係唔應該用喺食水上面嘅，而用喺食水上面嘅話，就係用一啲無鉛嘅，所以點解佢哋喺考試嘅地方，甚至用 video 去再喺嗰度強化。

問：如果我哋就咁睇呢一個文件嚟講，即係嗰個當時嗰個 TLP 嚟講，就冇特別就住話食水嘅用途嘅物料，要用無鉛呢樣嘢，喺文字上就似乎冇好清楚咁樣講出嚟，因為我就搵唔到有...

答：冇錯，喺文字上面就冇好直接咁講出嚟，但係喺某啲地方亦都簡接地講咗嘅，因為佢都會喺佢 notes 度亦都會要求啲學員喺做 soldering 或者用相關嘅材料嗰陣時候要符合相關嘅英國標準嘅。

問：明白。

答：而其中有個英國標準，你見到我個口供紙亦都講咗嘅，就係 BS864 part 2，佢喺個 notes 度有包含呢一個 BS 嘅，而嗰個 BS 裏頭亦都有講到嘅其實，就係 potable water，for potable water usage，就個 soldering material 一定要係 lead-free 嘅。

問：我哋睇一睇呢一個喺你個證人口供嘅第 22 段。

答：第幾段話？

問：22。

答：22 段。

問：呢度 22 段你就講番呢個 IVE 幾時成立。

答：唔，冇錯。

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問：跟住就講話有個 new course code 55776 同埋 53776 嘅，我睇番你後面嗰個解釋，我又唔知我理解啱唔啱，就話呢個 55776 同埋 53776 係咪就係代表咗你之前 286 同埋 266 嗰個 course？

答：冇錯。

問：因為你之後要用五個數目字嚟代表咁樣。

答：係，冇錯，係。

問：我想理解一下，就係如果讀完呢一個課程之後，如果要進身去到讀呢一個嗰個 short course 嘅，嗰個就係基本上一個考牌嘅課程嚟㗎喇。

答：冇錯。

問：嗰個即係令你有資格去到取得個牌照嗰個課程。呢度你係咁樣講嘅，如果我睇番嗰個短期課程，就睇第 14 頁 25 段。

答：冇錯。

問：喺水務署個 circular，我哋就見到係 5267 嘅嗰個？

答：唔，冇錯。

問：跟住我知道亦都係因為要改咗五個數目字，所以就變咗，應該係一個叫 56767 嘅？

答：冇錯。

問：呢度就咁講，就係話個 20 段嗰度，個 short course certificate 就初時係三十五個鐘嘅，跟住亦都作出咗因應嘅改變咁樣。後面如果--我想帶一帶你睇一睇第 478 頁，478 頁就係你哋 working party 嘅討論喇？

答：冇錯。

問：3.2 我哋見到 5267 就轉咗去 56767，係咪呀？

答：冇錯。

問：如果我哋睇一睇呢個 475 頁。

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答：475。

問：475嘅3.2嗰度。

答：係，okay。

問：呢度係咁講嘅，就係"Mr. K K Lo suggested separating 2567 into"兩個 new modules，去 reflect 個 passing rate，"chairman recommended the followings for discussion"。

呢度跟住有一度我想你都解釋下嘅，佢話"short course 5267 might be considered to offer only one theoretical subject and the new entry requirements for the short course would be"，呢度係咁樣，就話"Graduates of 53776/55776"，呢兩個就係我哋啱啱睇到嘅266同埋286，跟住個新嘅編號，"who registered as skilled plumbing workers under the Construction Worker Registration Scheme."

跟住呢度首先就係講出咗呢個係要做skilled worker，第二就係"Holders of MIP"，MIP係乜嘢？

答：Member of Institutions of Plumbing。

問：Okay，"Holders of MIP and registered as skilled plumbing workers under the Construction Worker Registration Scheme."呢度似乎你就帶出咗一個題目，就係話你讀完嗰兩個是但一個course，即係266或者286，都要係即係佢註冊咗成為我哋所講嘅大工，水喉嘅大工，然後先至佢可以讀呢個 5267，係咪呀？係咪咁嘅情況，當時？

答：咁樣樣，其實呢度就牽涉到--當時係一個討論嚟嘅啫，有一個建議，亦都有個討論嘅，係應該承接番上一段嗰個講嗰樣嘢嘅，就係3.2嗰段，3.2，我哋察覺到一樣嘢，就係其實讀呢一個最褸屘嗰個考牌個short course有兩批人嘅，一批就係來自craft cert.嘅畢業生加四年工作經驗，第二批就係所謂"or equivalent"嘅人，"or equivalent"嘅人就係member of Institution of Plumbing，當年叫做，而家就改咗名，就係 member of Chartered Institution of Plumbing and Heating。

呢兩批人有兩個唔同嘅特性佢哋發覺，craft cert.嘅人佢嘅hands-on skill係相當強嘅，所以個practical嗰個modules

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合格率係 okay 嘅，但係 theory 合格率就係相當差嘅。調番轉，來自嗰個學會嗰啲會員，因為佢哋個學歷相當高嘅其實係，個 theory okay 嘅，但係個 practical 基本上就合格率好差嘅。

問：唔好意思，我停一停先。如果你哋講緊話嗰個學會個成員個學歷比較高，通常佢哋又係啲咩嘢資格？

答：冇一個正式嘅統計，即係同啲前線嘅老師得知嘅啫，好多都有大學學位嘅其實，佢哋文字嘅能力係強啲嘅，相反地可能係冇一啲 practical experience 嘅，但係因為法例上面嘅需求，我哋 treat it as "or equivalent"，就畀佢考呢個試嘅。

問：明白。

答：但係於是乎個 practical 個 failure rate 好高，即係 3.2 嗰段就帶出咗呢個問題，當時 K K Lo 就個 chairman，VTC 嘅代表嚟嘅，就有一個建議解決呢個問題，不如將呢個課程就分開兩個部分，分一個叫 theory 嘅部分，個 theory 嘅部分邊啲人要讀呢，就係--咪住先，睇下先，分開兩部分，分開兩部分嘅，一個 theory 嘅部分，一個 practical 嘅部分嘅應該係。

好喇，於是乎兩個部分嘅收生嘅要求有少少唔同，希望藉此就解決呢一個兩批唔同能力嘅學生帶嚟個合格率嘅問題嘅，但係經過一輪嘅討論之後，你見到 3.3 嗰段，就係 after elaboration，最褸屘就係冇採納呢個建議，其實係，所謂沿用番而家嘅做法。

問：即係當時話想分開兩個部分，即係一個 practical，一個係 theory 嘅？

答：係喇，冇錯，係喇。

問：就 for 5267？

答：係。

問：就 practical 嗰...

答：甚至 practical 嗰部分就係唔需要嘅，個理由就係如果嗰個人註冊咗做註冊技工嘅，即係 skilled worker，我哋咪淨係讀 theory 嗰部分得囉，你明唔明？

問：明白。

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答：就唔需要喇咁樣，當時係有呢個討論嘅。

問：明白。

答：但係就你見到 3.3 個結果就係冇郁過。

問：冇採納到？

答：係喇。

問：冇採納到之後，用番原本嗰個制度底下，...

答：唔，冇錯，係喇。

問：...我想搞清楚係點嘅情況，原本個制度底下，都係話你如果讀完 266、286，...

答：冇錯。

問：...你就可以繼續去讀 5267 嗰個 short course 嘅，係咪呀？

答：冇錯，係，係。

問：就唔需要話一定要攞到個大工牌先可以讀，冇嘅，係咪呀？

答：唔需要，係。

問：就直接可以讀喇？

答：加四年工作經驗。

問：加四年工作經驗？

答：係。

問：另外如果係 equivalent 嘅 qualification，即係例如 holder of 嗰個...

答：MIP。

問：...MIP 嘅，佢哋係咪都係直接就可以已經進身去做呢個 5267 個課程？

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答：冇錯，又係四年工作經驗。

問：亦都係要加埋四年嘅工作經驗，係咪呀？

答：係喇，係喇。

問：好。

許偉強先生：呢度想唔想--需唔需要...

主席：好呀，break一break，好唔好呀？

許偉強先生：好，好。

主席：好呀，我哋十分鐘。

下午3時37分聆訊押後

下午3時53分恢復聆訊

出席人士如前。

主席：繼續，Mr Khaw。

許偉強先生：好呀，唔該。

建業訓練局第一證人：盧永康（職業訓練局香港專業教育學院（摩理臣山）建造工程系系主任及首席講師））宣誓繼續作供
許偉強先生繼續盤問

問：盧生，剛才休息之前，我都問過你關於就係讀嗰個短期課程就同埋譬如話喺嗰個水喉行業方面即係攞到大工牌嗰啲有冇關係，因為當時嗰個意見就冇被採納到，所以我咁樣嘅理解啱唔啱呢，就係話如果要讀例如嗰個5267嗰個課程嘅，應該就唔會同佢係咪攞大工牌或者中工

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牌有任何掛鈎嘅，係咪呀？

答：啱。

問：好，我就住你證人口供仲有幾點我想同你澄清一下嘅啫，就首先我哋睇番第 19 頁 43 段，43 段就講番當時嗰啲課程嘅內容喺 1996 年至到 2004 年有啲咩嘢轉變，我哋剛才都睇過下嘅。如果我哋就咁睇一睇 1996 年嗰個，我哋睇過喇，就我哋都知道係有講解，例如喺你個證人口供第 20 頁嗰度就話到有講唔同喉管有啲咩嘢好處、壞處嘅，如果我哋睇番呢一個，應該係喺第 64--就係剛才我哋睇嘅 82 頁，82 頁 1.9 嗰度。

答：冇錯。

問：咁就"compare the advantages and disadvantages of different pipe materials"，亦都係你講出咗係有個特別 on solder 嘅，我哋都睇過，就喺 79 頁嘅，呢個就係 1996 年嗰個版本，如果我哋睇下 2001 年嗰個版本，就喺呢一個你證人口供嗰個第 20 頁 sub-paragraph (2)嗰度都有講到嘅，呢個 2001 年應該喺 166--睇下啱唔啱先，係喇，166 頁。

答：冇錯。

問：剛才都睇過嘅，166 頁就有講到關於個 soldering 嗰方面，另外就係 184 就係講嗰個 demonstrate 個 technique of soldering 呢樣嘢。

答：唔，冇錯。

問：我就咁睇文件上，我都係咁樣講，就係就咁睇文件，呢個課程嘅內容就冇特別話介紹話嗰個焊料要用無鉛，呢樣嘢就冇特別去講出嚟嘅，呢樣你同意嘅？

答：冇錯，因為呢個係一個 syllabus 嚟嘅。

問：冇錯。

答：Syllabus 即係 outline 咗嗰個要讀嘅 topic 嘅啫。

問：2004 年個情況亦都係一樣，2004 年嗰個有關嘅 pages 喺 316 頁同埋 324 頁嘅，都係 2001 嗰個大同小異嘅啫，係咪呀？

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答：冇錯。

問：亦都冇特別話就住要用 lead-free solder 嗰個特別去講。喺呢一個 317 頁嗰度，喺你嘅口供都提過嘅，317 頁呢度就話有個 reference 嘅，就係 2 嗰度就寫住"Hong Kong Waterworks Standard Requirements, WSD, 2002"，即係以你嘅理解，係咪即係呢個亦都係一啲參考嘅文件，可能叫啲學生自己去睇下咁樣，去理解下咁呀？

答：冇錯，冇錯，冇錯。

問：我想問一問就係通常入學嘅學生嗰個語文程度，一般嚟講最低要求係咩嘢？如果英文嚟講，有冇語文有最低要求？

答：中三程度。

問：中三程度？

答：而家嚟講，就係中三程度，再早期之前，1980 年代之前就係小學六年班嘅。

問：小學六年班？

答：係。

問：即係近期啲就係中三？

答：係喇，其實嗰個--個 syllabus 冇錯係用英文寫嘅，我要強調一樣嘢，syllabus 只係講 topic area 啫，實質上，就住要個 topic 要教啲咩嘢內容，點解我個供詞度講話除咗 syllabus 嘅改變，我哋喺從中可以了解當時教學上嘅呢啲改變之外，仲要睇 TLP 就係咁解，teaching notes，因為 teaching notes 先至係最重要。

問：明白，明白。如果我哋睇下個...

答：嗰個教學個 TLP 其實係中文嘅。

問：冇錯，我就正想你睇一睇 2014 年嗰個 TLP 嘅。

答：Okay，好呀。

問：不過就住啱啱我問你 317 頁嗰一點，即係個 Hong Kong Waterworks

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Standard Requirements 呢樣嘢，我想問下，因為我知道你最近都同啲 instructor 佢哋跟進過當時有教過啲乜嘢。

答：冇錯。

問：你亦都有睇到呢一頁 317 頁嗰度講 Hong Kong Waterworks Standard Requirements。

答：冇錯。

問：有冇就住呢一點問過佢哋當時有冇講解過何謂 Hong Kong Waterworks Standard Requirements、需要符合啲咩嘢條件，呢方面有冇問過佢哋，跟進下？

答：有，有。其實你講得相當好嘅，喺從中我都學到好多嘢。呢個 Waterworks Standard Requirements 早期係九個 chapters 嘅啫，係冇第 10 個 chapter 嘅，係好後期，我唔知邊個年代開始加入第10個chapter，而喺我哋個syllabus亦都將第10個chapter係專登列明咗喺度嚟嘅，你見到第 316 頁個 syllabus，嗰個 topic area 第"3. Pipes and Valves"嘅時候，其中有個 bullet point 叫做"Use of pipes and fittings"，寫住"HKWSR Chapter 10"嘅。

問：冇錯，冇錯。

答：其實 chapter 10 最主要嘅內容就係講用嘅物料係需要符合水務局嘅要求同埋相關 BS Standard，要去留意水務局嘅網站上面最新嘅 BS Standard 嘅要求嘅。

問：明白。就住當時例如有呢個 chapter 10 嘅 reference，亦都有後面所講 Hong Kong Waterworks Standard Requirements 呢樣嘢，就住有呢啲咁嘅內容，你最近啲 instructors 跟進嘅時候，有冇特別向佢哋問過話例如就住焊料嗰方面，佢哋有冇特別去解釋嗰個 Waterworks Requirements 係啲乜嘢？

答：有嘅。頭先都講過，佢尤其是係教到嗰個 solder 嘅部分嘅時候，因為嗰一版嘅係沿用咗好多年前係用喺 basic 水上面嘅材料嚟嘅，其他去到嗰部分，佢哋係會較為強調講用喺食水上面嘅時候，一定要用係無鉛嘅，不但只如此，你見到就係喺個 video，佢亦都會放 videos 嘅。

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問：我想問下，因為你嘅口供都話你同啲 instructors 好多都跟進過呢件事嘅。

答：冇錯，係。

問：我想知道有冇問過佢哋大概由幾時開始佢哋嘅做法係咁，幾時開始佢哋去講話做食水嘅就一定要用無鉛，幾時嗰開始有呢個咁嘅做法？

答：準確嘅年份，我唔係好清楚，我就唔能夠複述到佢哋，但係我因為都問過好幾個嘅，畀我嘅印象，大部分都係 1990 年代尾，佢哋就相對關心呢件事情嘅。

問：1990 年代尾，2000 年前咁樣喇即係？

答：冇錯。

問：有冇問過佢哋就係話當佢哋去講解呢啲食水用無鉛嘅時候，有冇話顯示過嗰啲物料畀啲同學睇或者講解咁樣？

答：聽日有位 instructor，你可以問一問佢，其實喺佢口供紙亦都講咗，因為佢係負責呢個 practical sectors，我哋有 theory 嘅部分，亦都有 practical 部分，theory 就係你見到啲 notes，practical 嘅部分就係件實物同埋親手落去做嘅，梁文先生就係其中一個負責 practical 嘅 instructor，佢係會將兩種物料畀啲學生睇嘅，有鉛同冇鉛，亦都會講解畀佢知有鉛嘅物料通常喺邊度用，例如啲電子零件、啲 basic 水嘅地方嘅焊接咁樣樣嘅。無鉛嘅就一定要喺 potable water，佢有講解嘅，呢個。

問：Okay，好。我亦都會同梁生再跟進呢方面嘅事情嘅。

答：冇錯。

問：呢度我想最後嗰個課程方面我問一問你，就係喺你證人口供嘅第 23 頁第 50 段。

答：Okay。

問：50 頁你最主要都係講番個 56767，即係我哋之前聽過嗰個 5267 嗰個課程，即係嗰個 short course，即係難啲嗰個課程。你呢度就講話"basically a licensing examination course"，跟住就三十九個小時。第(1)段，我就想同你跟進番少少嘢嘅啫，你話喺嗰個理論嗰部分，嗰個"latest regulations and the WSD

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requirements on plumbing works are reviewed by"一個三十二個小時嘅 lecture，"before the 2-hr written examination. A copy of the TLP"，你剛才都提出個 TLP 好重要，我想同你睇一睇。

係 2014 年嗰個 TLP 入面就講話--你呢度就講話啲考生就"were reminded to have all materials and fittings complied with relevant British Standards and the WSD's requirements. It also states that all capillary fittings for copper joints have to comply with BS864 Part 2."咁樣，"Though this standard has been superseded, Clause 5.2 at p.2"就講番出嚟喇咁樣，亦都有介紹 general usage、potable usage of solders 等等嘅。

如果我哋睇下呢個 2014 年嘅 TLP 嘅版本，即係最近期嘅 TLP，你所講嘅就應該係喺 625 頁嘅。

答：冇錯。

問：呢度就係話「申請認可水喉配件」，就「有關申請認可水喉配件的指引」咁樣，呢度就有講到話--即係其實呢個都係就住話如果佢哋要去真係簽嗰啲 form WWO46...

答：冇錯。

問：...佢哋要注意嗰啲事項喇咁。

答：冇錯。

問：首先我想問一問你，你知唔知道 WWO46 裏面所講嗰啲水喉配件同埋嗰啲物料就冇包括焊料呢樣嘢，你知唔知？即係冇特別去包括焊料呢樣嘢嘅。

答：而家就知。

問：而家知，而家知。之前就冇乜考究呢樣嘢？

答：冇錯，係。

問：好，如果我哋睇下呢個水喉配件嗰個指引，就話你要獲水務監督認可內部食水供應設備嘅水喉配件要屬於其中一類，就話按照有關英國標準加印，英國標準就註冊商標等等嘅，經過英國水務研究中心證明同

埋英國水務附例規定的水喉配件，經水務監督批准使用--適用於本地嘅水喉配件等等。呢度就講出咗嗰個英國標準，呢度就似乎我就咁睇文件，就冇特別就住英國標準關於某一種物料去再進一步解釋㗎喇。

答：Okay，咁樣樣，因為呢個三十個鐘嘅課程其實就係 suppose 係一個考試嘅課程嚟嘅，但係喺考核課程之前，我哋要確保嗰個水喉匠嘅質素，其實就再 remind 佢一啲較為重要嘅 points 嘅啫，你話要全部好詳細咁再講解一次，其實要讀個三年嘅課程嘅。喺裏頭，你發覺就係呢一個 chapter 就係 standard requirement 嘅 chapter 10 嚟，其實呢度嘅內容。

不但只如此，你見到就係喺第 712 頁嗰度亦都再重提呢個 Waterworks Regulations 裏頭嘅 schedule 2，裏頭有關材料嘅相關標準嘅。

問：係，冇錯。

答：你話裏頭有冇講到 copper pipe，尤其是 soldering 嘅要求，你可以睇一睇個 schedule 2 裏頭，其中有一段，就應該喺第 714 頁，裏頭嘅--佢上面有幾個 point 嘅，由 13、14、15、16，係咪？去到第 17 點，裏頭有一個叫毛細裝置，毛細裝置就係 capillary joint，就係 soldering joint，佢要符合嘅英國標準嗰度有寫出嚟嘅，就係 BS864 part 2。

你明白一樣嘢，呢度所列嘅材料係相當多嘅，樣樣都係相當重要嘅，呢一個 soldering 當然重要，尤其是而家，係咪？

問：係。

答：喺當時喺講解呢一度嘅時候，佢冇可能逐一點逐個 BS 係逐個講解嘅。

問：明白。

答：係就住當時個社會或者當時行業認為最重要，可能抽樣出嚟調查，但係作為考生，其實佢要熟悉晒嘅應該全部所有嘢。

問：但係喺你口供入面所講話，喺第 50 段，剛才我哋睇到，就所講就話--即係你引用番呢個 TLP，就話考生就有被提及過呢個英國標準，同埋就係話嗰個標準都有分話一般用途同埋食水用途呢樣嘢嘅。我就咁睇文件嚟講，就如果我哋純粹睇呢個剛才我哋睇 625 頁嗰度，...

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答：625頁。

問：...就冇特別去講到呢一個問題，即係話用食水定係話用 general usage，即係一般嘅做法，所以呢樣嘢似乎我就咁睇文件，即係學生都係要--即係佢自己如果要識得搵呢個 BS864，即係喺你嘅文件夾嘅第 734 頁，如果佢有去到睇嘅，就可能會知道嗰個一般用途同埋食水用途嗰個分別咁樣，係咪呀？

答：唔。

問：因為我就咁睇你嗰個講義嗰個文件就冇特別去提到呢一個唔同用途嗰個分別嘅。

答：呢一個 teaching note，只可以咁講，就係畀咗一個 general information 畀個學員，佢有一個途徑，佢搵到相關嘅資料，你明白一樣嘢，佢裏頭所講嘅樣樣都好重要嘅，而家我哋 focus 當然就梗係講無鉛 soldering，其實裏頭所講嘅每一個配件嘅 BS Standard 都相當重要，如果我將所有嘅 BS Standard 相關嘅嘢印晒喺度，呢本書相當大嘅應該係。

問：明白。因為點解其實我問呢個問題就係因為我哋之前帶出咗，就係大概喺 2004 年 12 月嗰陣時，你都有提及過，就係話因為水務署都特登喺你哋個 working party 開會嗰陣時...

答：唔，冇錯。

問：...就住嗰個無鉛焊料呢樣嘢，特登帶咗呢個話題出嚟。

答：啱，冇錯。

問：我就睇下，但係似乎 2004 之後問題帶出咗，但係喺嗰啲課程就冇特別話針對性地去再講番呢樣嘢啫。

答：Okay，因為嗰個最主要嘅教學嘅內容就係來自嗰三年制嘅 craft cert.嘅，嗰三年制嘅 craft cert.亦都係好清楚喺考試度有考嘅。

問：明白。

答：老師喺堂上面有講嘅，亦都有 video 播嘅，呢個三十九個鐘頭嘅課程其實係 remind 番佢法例上面嘅要求嚟嘅。

問：好，我最後或者我哋放番你喺嗰個附件 15 嗰段短片，我讓大家睇一

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睇嗰段短片，好唔好呀？

答：好呀。

問：就係附件15嗰個短片。

答：好呀。

問：好短嘅啫，我都睇過，應該三分幾鐘嘅。

答：係，冇錯。

問：或者我哋先睇咗最後嗰個先，銅喉開料及接駁呢度。

（法庭播放介紹銅喉開料及接駁的數碼光碟）

問：或者我哋想睇埋另外嗰兩個...

答：好。

問：...錄像，我一次過再問盧先生。

（法庭播放介紹銅喉走錫配件接駁方法的數碼光碟）

答：仲有一個，有個--唔係呢個。

（法庭繼續播放介紹銅喉走錫配件接駁方法的數碼光碟）

答：仲有一個，AVSEQ嗰個。可以直接去5分24秒嗰度。

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（法庭播放介紹銅喉接駁方法的數碼光碟）

許偉強先生：我諗我就住嗰個錄像，仲有少少問題，或者我聽日再繼續。

主席：聽日先至問。

盧先生，麻煩你聽朝早10點鐘再返番嚟。

答：Okay。

主席：我諗其他律師都可能有啲問題。

石先生：主席，我哋有啲匯報，就係關於下星期嘅證人，就呢個星期，我哋聽日就會係VTC嘅證人就繼續作供，跟住我哋應該係有另外一個業界嘅協會，水喉及潔具商會嘅代表係會嚟作供嘅，VTC嘅證人之後。跟住就到下個星期就會係到水務署嘅證人。

原本我哋喺個證人嗰個timetable度，我哋就冇列舉嗰個先後嘅次序嘅，而我哋就曾經一度係應該係向其中某幾方嘅涉事嘅方面係曾經講過就係我哋其中一位專家證人Prof Joseph Lee就可能會係下個星期四或者星期五係嚟作供，但係我哋經過考慮過之後，就我哋覺得就係應該一氣呵成地，就聽晒水務署嘅證人，即係盡量畀佢哋畀晒佢哋嘅證供，跟住先至由我哋委員會嘅專家作供嘅，咁所以我哋而家下個星期係打算一氣呵成地係聽晒水務署嘅證人先。

至於仔細嘅次序，我哋應該係遲啲我哋會再向各方係通知嘅。雖然而家睇番嗰個provisional timetable都已經係裏面build in咗一個次序，應該係雖不中，亦不遠矣嘅，嗰個次序係，但係仔細究竟會唔會第三、第四個對調，我哋會遲啲係同水務署方面嘅代表律師係再商議，15至19號就一定會係專家證人㗎喇而家。

主席：唔該。我哋聽朝早10點再繼續，唔該。

2016年1月27日

Transcript by DTI Corporation Asia, Limited

下午 4 時 37 分聆訊押後

Transcript by DTI Corporation Asia, Limited

Wednesday, 27 January 2016

(10.02 am)

(Transcript of simultaneous interpretation
except where otherwise specified)

MR LI CHEUNG ON (on former affirmation)

CHAIRMAN: Please continue.

Cross-examination by MR SHIEH (continued)

MR SHIEH: Good morning. I have a few questions to put to you.

Yesterday, when you were examined, I asked you if you recall, depending on the workmanship of the worker, sometimes, when heated, there might be an case of excessive solder, so that some solder went inside the copper or the elbow. Did you hear that question?

A. Yes, I remember.

Q. You said that if the workmanship is good, it won't be the case. You have also said that there are a lot of techniques to prevent this from happening. Yesterday, you told us that when you insert or before you insert the elbow into the pipe, you will have a layer of tin. Therefore, the solder that you apply on the outside surface does not have to be large in amount. Do you recall?

A. Yes, I do.

Q. When you teach workmanship, did you tell the students?

A. Yes, we told them and we demonstrated. After telling them about the steps, we have to demonstrate to the students. If they don't understand, they will ask questions immediately. If they don't have questions, then we will give the materials to them in the workshop and they have to practise.

Q. So that's when you teach them. At the time of testing, do you actually have an assessment to make sure that you check their workmanship, or would it be the case that for the practice test you are only satisfied with non-leakage?

A. Leakage would be one of the points to watch out, and in fact, during the course of it we will pay attention to the workmanship, but we don't give an assessment, because for the practical work, whether the water comes out or not -- well, in the process, it isn't a matter of getting a licence but it will become part of the practice. If water seeps out, we have to ask them to do it again. If the workmanship is found to be problematic, we have to rectify it. The instructor will be watching their practical work.

Q. Do they have to take a test?

A. No. During our days -- well, what should I say? When I became an instructor, of course there was, but when I was still in practice, there wasn't.

Q. Well, you taught until 2011.

A. Right.

Q. It was about two years ago that you joined again and were responsible for testing?

A. Right.

Q. You were an instructor up to 2011. I'm not interested in the time when you were in practice. But you taught up to 2012, and now you are responsible for testing.

So please tell us, there is indeed a test?

A. Yes, there is.

Q. Is there a practical test? I'm not talking about the routine observation. I'm talking about the test.

A. You mean a test to become a semi-skilled or skilled worker?

Q. Yes, indeed.

A. Yes. The instructor will be patrolling in the workshop to watch out for the workmanship and the techniques, so they will be marked, they will be assessed, and there will be an impact on the final result. We have also got video recording facilities and water supply at the workshop.

Q. So the purpose is to check whether too much has been inserted into the joint. Would you go so far to take a look at that or you just have a sort of general observation whether the workmanship is good?

A. The main point is about the procedures, whether the steps are wrong. As to the amount to be applied, it's one examiner against ten candidates, so it isn't a one against one observation, so we can't tell how much solder has been applied.

Q. Earlier on, we went to the Government Laboratory. We were shown some samples, that is the wrong ones, the improperly done ones. They were opened up. It appeared to us that too much solder had been applied. Unless you cut it up, you can't see it. You can watch their workmanship but you can't tell that too much has been applied. When too much has been applied, the solder gets inside. You won't cut it up because it will be a waste?

A. Even as of now, we won't cut up all the pipework done by the candidate to check how much solder has been applied. We don't make an assessment of that.

Q. So you just have an observation of the outside of the pipework?

A. Right.

Q. We have also heard it has been said that some people have said if you use the solder strip that is leaded solder, you say that you don't have a proper term for that. The melting point is lower, so it's easier and quicker to melt it for the purpose of jointing. But

then the disadvantage is that by having a quicker melting, it's easy to have a large amount going inside, causing wastage?

A. You mean during the test?

Q. No, at the actual time of soldering.

A. You mean workers on the site?

Q. They have told us -- well, let me tell you this. What has happened is that I think this point was considered by us earlier on. That is, how come that some people have chosen to use leaded solder while others have been using lead-free solder. I think maybe it's a matter of lack of awareness or, when placing an order, something has been said, materials have been sent and then people aren't too aware of it.

Another possibility is that perhaps it may be the case that there is an economic factor. That is, as we know, in the market, we have been told that for the same amount of solder, leaded solder is cheaper; lead-free solder is more expensive. When this point has been raised, then the masters and the employers have said that the savings won't be great, and then secondly, it isn't actually a matter of savings, because when you use leaded solder, first of all, it is in the form of a strip, and for the lead-free solder (indicating), our understanding is that it is in a roll, and they have

given two reasons, at least two reasons, why there may not be any savings.

First of all, if you use a roll, then you carry it with you and you go around with it, and you just use as much as you need, and then you will keep the rest in the roll and then you move on to another site requiring soldering. But if you cut up the solder materials into strips -- and they have told us that it is leaded -- for the leaded one, it is in the form of strips. If you take one strip to do the soldering work, if you have anything remaining, the workers won't keep them; they will just be discarded. So it is one reason why there may be wastage.

Another possibility is that for the leaded solder, the melting point is lower, and so you just apply some heat and then it will become liquid very quickly, and then you need to have a whole amount to go there, and sometimes it just doesn't go into the pipe; it may also drop onto the floor. So at the end of the day you may end up using a greater quantity than lead-free solder, so you don't make any savings; instead, you may have been using more or a greater amount.

So what is your comment?

A. Let me say this before I answer your two questions. Let me supplement.

Just now, you have always been talking about the tests at the Construction Industry Council. Let me say that for the CIC, for our trade tests, we have always been supplying lead-free solder to our candidates. There's no chance that they will be using leaded solder. We don't allow that.

Q. You mean when you are giving instructions?

A. No, when I am testing the candidates.

Q. Just now, I have been telling you what has actually been done by the workers.

A. So that has nothing to do with my CIC experience, but from my own experience, if you cut up the solder materials into strips, whether it will be causing more wastage, then in the case of solder wires -- well, in fact, we have to joint the pipes outdoors and indoors. When it is indoors, they would like to use rolls of wires, because when the solder drops onto the ground, it won't drop to the street and cause human injuries.

Q. When you are on scaffolding, when you are doing the soldering work, the solder may fall onto the ground?

A. Now, for some workers, when they go outdoors to work on the external walls, they don't like to have the rolls of wires. They would rather have it cut up into wire strips measuring 1 to 2 feet and then they will carry it with them and fold it up, and when they have to use it,

they will unfold it. Of course, they can't be using a small length, a short length of solder, and then they have to discard it. This is what I have observed when we are on the construction site.

Q. So you are comparing the wires and the strips in terms of wastage?

A. Correct.

Q. Now you are saying that even for the strips, you are cutting up the lead-free ones into strips. So our focus is on strips and wires.

A. Right. For the second point, lower melting point, so that the solder will go into the fittings and the pipes or dropped onto the floor. This is a matter of workmanship and confidence. If the worker is skilful enough and has been very experienced, he won't be wasting too much solder on that joint. If his workmanship is good, as soon as he sees that the joint is connected, he is confident that there is no water leakage, of course he won't continue with the soldering.

From my demonstration video, when the temperature is good enough, the heat has to be removed. If you don't know that it has melted, if you continue to apply the solder, the solder will continue to melt. Either it will flow outside the fittings and drop onto the floor or it may remain in the fittings or the pipes, and as

a result it will accumulate there.

Q. So it depends on the skills. If somebody is not confident or he is not skilful enough, then there is this possibility; that is, using something of a lower melting temperature?

A. It isn't just a matter of using solder strips of a lower temperature, lower melting temperature. It's a matter of whether he is confident.

Q. There is one other point I want to bring up with you. You have been telling us how you have emphasised to the candidates that for potable water they have to use the lead-free solder materials. So that's what you have been telling your students.

But what about the CIC? Has CIC given you any briefing or instruction that instructors should tell the trainees certain important points? We have seen the syllabus, and from the very start lead-free was not something that has been stressed. All right? So you will be telling your trainees, but other instructors will just look at the syllabus and it is not in the syllabus, so it depends on the individual instructor, to see if it will be taught?

A. We have four instructors. We have four concurring classes at the peak of the training session. We have many benches. It's a big workshop. And every

instructor will be giving instruction, which can be seen and heard by trainees on the other bench.

CHAIRMAN: So you mean the instructor will be teaching in the same workshop?

A. Yes, although they may not be teaching soldering at the same time, we will be talking about use of equipment or -- well, one may be talking about plastic pipes, the other one ductile pipes, and another one copper pipes. When one instructor is giving instruction on how to joint copper pipes, trainees that are trained by another instructor may also hear what's being said.

MR SHIEH: That would just be a coincidence; right? But there's no instruction, no directive that it must be taught. So, from your own awareness, your own knowledge, you know this should be taught, but sometimes if you are giving instruction to your trainees, other trainees in the vicinity might just, by sheer chance, hear what you are saying. Is that the same as with other instructors, in respect of what you are teaching your trainees?

A. I was at one time earlier on looking at how an instructor taught the trainees. I heard the instructor saying the same things.

Q. When was it?

A. It was after the lead in water incident. The CIC would

like to see what is being taught. I didn't say anything. I was there to observe the instruction given to trainees. The trainees were told, "This is lead-free, this is not lead-free."

Q. But that's after the lead in water incident?

A. Yes.

Q. Another point on instruction. According to what you have said, there's no established rule or something in writing, something as a matter of the instruction system. A lot would depend on the individual instructor and whether other instructors are doing this by chance. I am talking about instructors giving instructions of this nature. But not everyone is as knowledgeable as you, in some cases. So how can you make sure that the instructors will be telling the trainees what should be lead-free and what would be regarded as leaded solder?

A. We have senior instructors responsible for purchasing the materials for use in soldering. So all the instructors will be using the same material. It won't vary from instructor to instructor.

Q. Yes, I understand. You use lead-free solder. But do you have a system whereby, "We don't rely on the individual awareness of instructors, and every instructor will be stressing the point that lead-free solder should be used"?

A. No, not at that time.

Q. We are talking about copper pipes, using tin solder, and we also know that the solder can be lead-free or leaded. After this incident, the guidelines make it very explicit that tin soldering means lead-free tin soldering. But in the past there were two kinds, but of course, for the drinking water plumbing, you use lead-free solder. But you also use strips.

A. Right.

Q. You also teach them how to use strips.

A. Right.

Q. Technically speaking, yes. A lot would depend on what the employer would require.

A. Right.

Q. Also, it depends on whether the contractor would use silver solder. But there's also a risk of lead for silver solder?

A. No, I don't know that.

Q. So when you tell them to use lead-free solder, it's in the context of tin soldering; right?

A. Yes. For tin soldering, there are two kinds. One is the so-called solder strip, 40-60. Another is in rolls, the lead-free solder wire. We would tell the trainees that there are the two kinds. But for the silver rod soldering, there's only one kind.

Q. But we know that there are some products which may contain lead. So you wouldn't be telling your trainees that when you purchase silver solder, you have to make sure that it's also lead-free?

A. No.

Q. In some products, cadmium is also contained in silver solder. What's that in Chinese, "cadmium"? All right.

So the question is, did you tell the trainees that certain heavy metals should not be allowed?

A. Well, there's only one kind of silver solder roll or braze. There's only one kind of brazing material.

Q. So, when it comes to saying that no heavy metals should be allowed, it's only in the context of tin soldering and it's about lead-free? You don't talk about this in the context of silver soldering?

A. No.

Q. Another master, another soldering master, has told us that for the leaded solder, with a lower melting point, it's easier if it's applied in a windy situation, because you have to use the torch to heat up the things. Using material with a lower melting point is more convenient. Have you heard of such comment?

A. I am saying something about my personal experience, not that of CIC. I would say this is not correct. It depends on the LPG torch, because in the course of

burning the LPG will have to mix with air before the fuel can be burned. So if it is a windy situation, it will affect the torch, not the solder. If burning is prevented by the gusty wind, it will go off and you cannot really do soldering. It's got nothing to do with the solder being applied.

Q. Lastly, I want to put one more question to you. According to our understanding, concerning the semi-skilled and skilled worker testing and the training courses, one of the organisations responsible for their training is CIC?

A. I think only CIC provides the certificate for semi-skilled and skilled workers.

Q. Well, one of the ways to be a skilled worker is to become a licensed plumber.

A. Right. (Chinese spoken).

Q. In terms of provision of training courses, if a trainee says, "I want to be a skilled worker, I will go for a CIC training course", is that the mainstream approach?

A. I don't quite understand. There are quite a few channels available. If you want to get a skilled worker certificate, no training course can lead to a certificate of skilled workers directly. The same for semi-skilled workers. You have to take the test, no matter whether you have attended previous courses. For

example, if you want to enrol for a skilled worker training course or skills upgrading test, you have to pass the semi-skilled worker's test. After the test the applicant will be given a report. He would know the deficiencies of his skills, and then he may enrol in different modules, one of the three or even all the three modules.

Then, if they fail the semi-skilled worker's test, they will have to take the skills upgrading test, and the instructor will tell them the correct steps to use and the skills to be acquired, and there will also be a practicum, a practical session. We will not directly give them a certificate of semi-skilled. We will only give them an attendance certificate, and if the trainee is competent enough, they will take the semi-skilled worker's test again. There's no special concession given to trainees. They will have to pass the test. The passing mark is 60.

Q. So the provision of courses and the testing and certification are both under the CIC?

A. Yes.

Q. Licensed plumbers, according to your understanding, are not tested by CIC and the courses are not provided by CIC?

A. No. It's the VTC. I am also a licensed plumber. You

have to get a VTC certificate, the three-year craft certificate in plumbing and pipefitting issued by the VTC, before you can take the WSD training course. I think it's a 49-hour training programme. There will be instructors instructing the trainees of the work flow of submitting forms for plumbing works, and then after the course the trainee would take the licensed plumber test, and now there is also a practical component to be tested.

Q. So CIC is responsible for training semi-skilled and skilled plumbing workers. But licensed plumbers are trained by VTC, and also tested by VTC. But what's the difference the contents of training?

A. Well, there are differences. A worker --

Q. Let's look at the skilled worker.

A. Skilled worker, we are talking about the craftsmanship, the technique. He can be illiterate, but if he can read a map, a plan, and can tell the size and can do things as required and you get 60 marks, then you have the skills that would enable you to get a skilled worker's certificate.

For a licensed plumber, it's on a higher level in the trade compared with a skilled worker. So a licensed plumber can get exempted from becoming a skilled worker. But on the other hand, a skilled worker cannot directly

get a licence as a licensed plumber. For a licensed plumber, you need to have the cert, you have to take the course, and then you get the examination. Then, of course, if you are a member of the UK authority, you can be waived from the dozens of hours of course attendance.

Q. Of course, you have to go through the flowchart. Just now, the chairman also talked about that point. It is said the VTC is responsible for the LP and the CIC is responsible for the skilled worker trade test. But in terms of instruction, is there anything that the CIC cannot do?

A. First of all, for the licensed plumber, there are two points. First of all, we have got the craft cert running for three years. From the CIC's perspective, we have the manpower resources to do with it, but of course we can't do it lightly, because the licensed plumber must go via the VTC. In terms of manpower, we can give the instructions, we can include the practical part, but then for the dozens of hours of coursework, we have instructors from the WSD giving instruction. So perhaps, for that point, the CIC for the time being cannot cope with it.

Why is this so? This is because we have to ask the WSD inspectors to give instructions.

Q. You mean you give them a subsidy? What do you mean by asking them to come?

A. I understand they would like to have the inspectors coming to us, but I'm not sure about the relationship between the VTC and the WSD. Is it free of charge or with payment?

Q. In any event, the VTC can get the WSD inspectors to give instructions.

A. There are two parts, as I have mentioned. At the end of the day there is a written test and a practical test. VTC colleagues will make the arrangements for the test, and we can do it as well, because for the skills required, in fact the demand is less demanding than our skilled worker's test. But then for the written test, it's more difficult.

Q. Do you have the resources or is it more theoretical?

A. We have more than 20 licensed plumbers working for the CIC, so I suppose we can do it. As to whether we can get the inspectors to give assistance in giving instructions, I'm not sure.

Q. So you think that's the major difficulty?

A. Yes.

MR SHIEH: Thank you.

COMMISSIONER LAI: Can I ask this question: the only way to become a skilled worker or semi-skilled worker, you have

to take a test of the CIC; there is no other way, is that correct?

A. No other way.

COMMISSIONER LAI: Thank you.

MR SHIEH: Thank you. I haven't got other questions.

Cross-examination by MR YIN

MR YIN: I have some questions to ask the witness. That is the knowledge about characteristics of different kinds of solder materials in the industry. I intend to go through a document together with you. I have given out a copy to the WSD and the Commission, and I'm now going to hand out the document. (Handed).

Let me brief you about this document. In the USA, they have got a construction industry body. They have regular conferences, and papers are presented to the industry. This paper comes from a 2007 conference. They talk about constructing the roof of a house. They also go into details about the use of solder materials.

Mr Li, I represent the Housing Authority. As I have told you, I would like to sort of ask you about the industry knowledge about solder materials. According to the information here, in 1981 you took the basic craft course in plumbing. In 1989, you qualified as a grade I licensed plumber. So can I say that for the plumbing industry in Hong Kong, you can be regarded as somebody

who's rather experienced?

A. Yes, you may say so.

Q. Please take a look at H3. Mr Shieh took you through that yesterday. H3, page 2021. That's in relation to your teaching materials.

A. Is it 2023?

Q. 2021 and 2022. 2021. Okay? Here, it talks about the different methods of connecting water pipes.

A. Yes.

Q. It appears that when it comes to the jointing, it doesn't actually talk about the distinction between leaded solder and lead-free solder.

A. No, it isn't clear from what is written there.

Q. You talk about different ways to connect them. Say, for example, applying the solder -- my understanding is that this is quite an old-fashioned method. That is, you will melt the soldering material and then you place it on the joint and then you rub it. In English, it's called white jointing.

A. I'm not sure. But in Chinese it's (Chinese spoken).

Q. So they will apply the solder there and then you rub it on.

A. As a result of the flux, the tin will stick to the surface. Rubbing it means that if there is too much solder, it won't go into the fittings. We have to rub

it off so there won't be too much. So to rub it doesn't mean that we press onto it. It's to rub off the excessive ones.

Q. So, for this method, it means that you have to use leaded solder materials?

A. No, not correct.

Q. You have also talked about copper pipes, steel pipes and then lead pipes, in relation to the connection.

Please read on.

A. We haven't touched upon -- we haven't come across the lead pipes.

Q. No, they have got it here. Aluminium and GI pipes. You didn't come across it, but it's in the teaching materials.

A. Yes, in the teaching materials.

Q. If you don't know, tell us you don't know.

For the connection of lead pipes, if we use solder materials, whether you apply the tin without the solder, you will still be using leaded solder materials only?

A. No, I don't know, because I haven't come across that.

Q. I would like to ask you to read the following. I have just submitted a paper. As I have said, it isn't found locally. Maybe others haven't come across it. There is this American body responsible for the construction industry. In the year 2007, they had a conference,

there is this paper.

I'm sorry, Mr Li, can I ask you this question: do you read English?

A. Yes, but not too proficient.

Q. It doesn't matter. Maybe I will try to use my way to translate it into Chinese for you. For this paper, it is about the construction of the roof and how the metal pieces can be welded. You said that in the case of the UK, traditionally the licensed plumbers would be responsible for the welding together of metal pieces. Here, I don't know whether my understanding is correct or not. Connection of water pipes and the use of soldering, when compared with soldering of metal pieces, in theory the technique is the same?

A. No.

Q. In both cases, solder will have to be used?

A. Yes.

Q. I think this one will be of great assistance to us. There is this explanation here. On page 1, line 1 -- well, for each page, they have three columns. In the middle part of the first column, they talk about the explanation of welding. Basically, it means that you heat the metal piece which has to be connected lower than the temperature of that metal to be connected but higher than the solder material, so as to make use of

the solder material to do the connection. So this is what is meant.

Do you know agree?

A. Yes. For the temperature, we don't actually make a deliberate effort to measure it. As I have said, the CIC does have the equipment, and we have taught the trainees as to how to carry out the connection of GI pipes. But then this is different from the equipment for connecting water pipes.

Q. But are you saying that the basic theory is that the temperature is such that it can melt the piece to be connected, but higher than that of the solder materials?

A. It has to be high enough to melt the solder materials, but it mustn't be so high that it will also melt the GI sheath.

Q. And it is said that there is soft soldering. That is what we are always referring to. So, basically, they use solder material, so that it is below a temperature of 450 degrees Celsius.

A. Let me say this again. We won't check the temperature. We won't check whether it is 450 degrees Celsius, because we haven't got a thermometer when we teach the trainees. Mr Yin, when you talk about the connection of the GI sheaths, when compared with the connection of water pipes, when it comes to the methodology as well as

the use of materials, they are not the same.

Q. I just want to say that for welding, we know we have silver brazing; do you mean what I mean?

A. Yes.

Q. For brazing, when compared with soldering, the principle is the same; it's only a matter of the difference in the temperature, higher temperature?

A. No, I don't agree. The methodology is different. For brazing, you don't need to clean the work pieces.

Q. But still you have to raise the temperature such that it melts?

CHAIRMAN: I want to ask you whether you want to justify why the Housing Authority is not using brazing. If that's not the case, there's no need for to you ask such questions.

MR YIN: I just want to know about the industry's knowledge. Please turn to the next page. It talks about the history of lead-free soldering, and as a matter of historical practice, the most common solder was an alloy of tin and lead.

A. Are you talking about plumbing?

Q. No, no, no. It's about soldering, and the common solder used was an alloy of tin and lead.

CHAIRMAN: Soldering of what?

MR YIN: That's a valid question. I'm talking about the

technique of soldering.

CHAIRMAN: Well, it depends on what you are working on. If it's working on tank, it's different.

MR YIN: Before 1986, at least in the US, 50 per cent of tin mixed with 50 per cent of lead would be used for jointing drinking water pipes?

A. I don't know that.

MS CHOW: I want to interpose at this stage, Chairman. Page 1 of the document is also talking about "(In English) roofing, waterproofing and exterior wall systems".

But Mr Li has already said the soldering of water pipes, it's very different to soldering of other materials. This is about waterproofing.

CHAIRMAN: Actually, it's also on safe drinking water.

MS CHOW: But I think it's in a different context.

CHAIRMAN: Mr Yin, what are you trying to achieve? What do you want to tell me, in other words, or what do you want to tell the Commission? Ultimately, I think you want us to know something; right?

MR YIN: It seems that the trade, in giving instructions to workers, they would say, "Use lead-free solder for drinking water plumbing". So why -- we want to know the difference between using lead-free solder vis-a-vis leaded solder -- what's the incentive for the worker to

go for one instead of the other?

CHAIRMAN: I think Mr Shieh has already explored the issues.

MR YIN: Of course, if you say we can just go for literature without putting the question to the witnesses, then I will just stop.

CHAIRMAN: No, I was just asking you what you are trying to get at.

MR YIN: It seems that leaded solder has a special feature. It can reduce surface tension. So the jointing is easier, and many workers would think that using lead-free solder is more difficult, technically speaking.

CHAIRMAN: So why don't you put this question to the witness?

Mr Li, do you know that leaded solder can reduce surface tension?

A. I don't know. I don't know whether surface tension can be reduced. But I know that the workers, if they are skilful enough -- as I said, solder wire would melt easily. You have to time the application very quickly. If you do it skilfully, you can achieve leakproof and there would not be a lot of wastage. Some other workers would use leaded solder; it's more sticky, so that you can cover all the areas at the joint.

CHAIRMAN: What's surface tension in English?

MR YIN: Surface tension.

CHAIRMAN: What's the relationship with viscosity? You are talking about viscosity or surface tension?

MR YIN: I was talking about surface tension and the witness is talking about viscosity.

CHAIRMAN: Yes. Two different things; right? So he doesn't know this.

MR YIN: But you would agree that if a worker is not skilful enough, he will think that using leaded solder is easier?

A. No, no. Well, he should not use substandard material because of lack of skill.

Q. I'm not talking about should or should not. I'm talking about, in connecting the pipes, it's going to be easier for that particular worker?

A. You shouldn't do that if you are skilful.

Q. Do you agree that that's an easier method?

CHAIRMAN: You can tell that to me later.

MR YIN: Have you considered that because of this factor, you have to explain to the worker in more detail? You don't just say, "Use lead-free solder"; you should tell them that using leaded solder can lead to big problems.

CHAIRMAN: You mean now or at that time?

MR YIN: At that time.

A. No, we didn't do that. We told them lead was hazardous.

But I don't know the exact extent physically or medically. We knew that it was harmful to health.

CHAIRMAN: Questions?

Cross-examination by MR G CHAN

MR G CHAN: (Chinese spoken).

INTERPRETER: The speaker is not speaking to the mic. The audio reception is extremely poor. The interpreter cannot hear the speaker.

MR G CHAN: Yesterday, you showed us a video clip. You know the pipes were joined very tight. There shouldn't be any gap or it should be very small.

A. Very small, yes.

Q. If we use leaded solder strips, the viscosity is so high. So if you look at the joint, you would expect a lot to go further into the pipe, inside of the pipe, and even may clog up the pipe?

A. If you continue to apply heat, in liquid form the solder would flow inside. On the outside, you can see what it looks like on the outside. If the melting point is not high, you can easily get a very good appearance.

Q. Let's look at X/3125. It's stated there that you completed the basic craft course in plumbing in 1981, and you joined the construction industry after that, and you were involved in plumbing works -- private housing projects or public housing projects?

A. Private housing projects. I have never been involved in public housing projects. Private housing estates, hospitals and other construction works, in plumbing works.

Q. After you became an instructor in 1996, you were not involved in actual plumbing works anymore in the industry?

A. No. I joined the CITA in 1996. At that time, there were still some outstanding projects for me, and CITA wanted me to assume office as soon as possible, but some of my projects had another six months to go, so I told the chairman -- with the chairman, I was allowed to complete the remaining projects, and I promised them that I would not take on further assignments after that. So for a half-year after joining the CITA I was working on the site, in 1996.

Q. So you stopped in 1997.

A. From 1997 onwards.

Q. On page 3126 of your statement, it said that the use of copper pipes was common in private works in about 2002, and you became an instructor in 1996. So my inference is that for public -- in fact, prior to that, GI pipes were used in public housing projects, but for private housing projects they used copper pipes. So you have no chance to be involved directly hands-on with the

soldering?

A. Yes, I did. All instructors of CITA had to go to the construction sites at least twice a year, to learn more about the practice and the skills being used in the industry, so we could teach our trainees.

The basic course was for two years, and there is practical training involved for our trainees, and our instructors had to go to the site to observe how they work.

Q. For public housing projects, the pipes are external pipes running over the roof. Maybe we can show the witness the lead-free solder.

CHAIRMAN: Well, he knows that it's not light.

MR G CHAN: The weight is not very heavy either. If you have to hold it up, it would be very exhausting. So would someone be cutting up some wires?

A. They will cut 50 mm or so and use it to joint the pipes.

MR YIN: Can I ask one more question in a particular field?

CHAIRMAN: In what area?

MR YIN: Silver brazing. Yesterday, the witness said that silver brazing would result in better waterproofing than tin soldering. But according to table 6 of this document, there's no difference.

Further cross-examination by MR YIN

Q. Mr Li, yesterday we asked you why private housing

projects or hospitals would use silver brazing. You said it was because of the need to supply hot water.

I want you to look at this British Standard, in regard to soldering material. It can be found in many places but one of them is B15.4, page 40193. It's in the second witness statement of yesterday, Ms Fung's statement.

You can see a table here, the maximum temperatures, the liquid to be carried by the pipe, and also the pressure that can be allowed. You can see soldering, and then, secondly, brazing. So, tin soldering, in the first row, and then second, brazing. For soldering, you have I, leaded solder, 50/50 or 60/40; and then II and III, lead-free soldering; and then IV, V and VI are about brazing, not just silver brazing but there is other high-temperature brazing as well.

For leaded soldering, the maximum temperature is 30 degrees Celsius or 65; and then you have another three columns next to it. The maximum pressure, under 30 degrees Celsius or 65 degrees Celsius, then pipes of different diameter size would be able to withstand certain pressure. Then down there you have unleaded soldering and high-temperature brazing. You can see that for 30 degrees Celsius or 65 degrees Celsius, or 110 degrees Celsius, that is over the boiling point of

water, up to 108 mm diameter, the maximum pressure is the same. That is to say, for unleaded soldering and for high-temperature brazing, the maximum pressure is the same.

CHAIRMAN: Can you please repeat your last question? The one that there's no difference, that no difference can be found.

MR YIN: For water temperature of 30 degrees Celsius and unleaded soldering materials, that's categories II and III, for a temperature of 30 degrees then the pressure is 25 bar; and then for 105, it is 16. So again, it's 25, 25, 16. Then for water temperature, 65, unleaded, 25, 16, 16; for brazing, for 65 degrees Celsius water, 25, 16, 16; for water temperature 110 degrees Celsius, 16, 10 and 10, for high-temperature soldering. For brazing, 110 degrees Celsius, 16, 10 and 10.

So for diameters from 34 mm to 108 mm, for both solder materials, when the water temperature is 110 degrees Celsius, the ability to withstand pressure is the same.

Do you understand this chart?

A. Yes.

Q. For this information, it is an analysis of the British Standards. So, for unleaded solder and also high-temperature solder materials, when it comes to

108 mm diameter pipes, when the temperature is 110 degrees Celsius, the performance is the same?

A. Before I read this one, I didn't know. Now that I have come across it, now I know.

Q. Having read this piece of information, what would you say about what you said yesterday? You said that brazing was needed for hot water supply. Does it stand?

A. I don't agree. Yesterday, I also talked about poor workmanship. For private housing estates, tin soldering was subject to poor performance. Cold water was used to test, so they won't find out that the water pipes would burst. When there is a population intake, for the poorly connected pipes, there would be water leakage. Therefore, the developers learned from this experience and we found there was a trend. Developers started to opt for brazing. We observed such a trend.

Q. So our understanding is that the performances of the two materials are the same, but then we have to take into account the differences in workmanship and therefore it would be safer to use brazing?

A. Can you repeat the question?

Q. Materials alone, that is unleaded solder and also higher-temperature brazing materials, on the face of it the performance is the same, but when you have to take into account variation in the workmanship of the

workers, it will be safer to use brazing?

A. You may say so.

MR YIN: I have no other questions.

CHAIRMAN: Does anybody else have any questions?

Ms Chow, any questions?

MS CHOW: No.

Questioning by THE COMMISSIONERS

CHAIRMAN: I want to ask this question.

We saw your demonstration applying the solder, rubbing the solder. When we watched videotapes from the US Copper Association, we haven't seen this. So, for this particular methodology, for how long has it been used?

A. I started to join the trade in 1980s. I think our instructors had been teaching us this, and I joined the CIC as an instructor in 1996. In the brief, this particular step has also been mentioned, and that's why I carried on with the tradition and I've also taught this one. Of course we have to make sure that we teach everything, but as to whether a particular skill is being used in the industry, in reality it is a separate issue.

CHAIRMAN: I myself haven't seen how it is being applied in the industry, but we do have some photographs in relation to the sample or mock-up flat. I think that

the workers do not actually have this step. What they do is that they just rub some flux at the end and then they will be connected.

A. Mr Chairman, what I said was that when we teach, we have to do so comprehensively. We are talking about basic courses. The trainees have just left school. They want to join the trade. So we have to start from scratch.

After we have taught them, as to how they will apply the knowledge in the industry, and also for smaller pipes, I myself have done this, we can still connect the parts without rubbing it. If you can master the skills, you can skill make sure that it's water-tight and you can cover the same area.

CHAIRMAN: Because if you apply the solder materials after applying the flux and after applying the solder there, you have to rub it once and then you heat it up, and after that --

A. There is an additional step?

CHAIRMAN: Yes, correct.

A. So, in the industry, this additional step will prolong the process. It means that more manpower would be needed. I won't guess whether it is because of this point that they have skipped this one.

CHAIRMAN: I want to ask, in theory, if workers would like to be quick -- well, let me put it this way. If workers

skip this part of applying the solder, and just adhere to the simplest way, that is making a ring on the outside.

A. Yes.

CHAIRMAN: If they want to go after speed, then my understanding is that, in theory, if they go after speed, then there won't be too much tin going inside, because if they want to be quick, they want to be fast, I think the end result would be that less solder would be applied, and then there is the possibility of water leakage.

Mr Shieh is saying that we went to the Government Laboratory, but actually what we saw was that all the tin went inside. That is, it is bulging at the joint, a lot of them.

A. Yes, within the system.

CHAIRMAN: I am thinking whether, when workers rub a layer of the joint, they do not use a piece of cloth to rub it off, and they just insert the part?

A. No. I have explained the matter to Mr Yin. The rubbing with a piece of cloth is simply to remove the excessive solder. Otherwise, it will be bulging, and then you can't actually insert the part, because it is quite fitted, and then we need to rely on the capillary action. If you don't rub, you may not even insert --

you may not be able to insert the part into the connection.

CHAIRMAN: So when you apply outside, if they don't rub, that means when they apply, they have to apply a lot before some will go inside?

A. I would think so. It depends on the skills. If the skills are good enough.

CHAIRMAN: We are of course talking about those with poor skills. It won't be a problem if somebody is skilful, whether you use leaded or lead-free solder, if you are very skilful.

Further cross-examination by MR SHIEH

MR SHIEH: If I may have a follow-up, not arising from the questions just now, but, Mr Li, for brazing, you have told us that if somebody is poor at soldering, then for private housing estates, the water pipes are embedded in the walls and it will be a big problem if the water pipes burst, and so the developers would go after brazing.

Are you talking about a lower level of skills for brazing and so workers can have poor workmanship and it will still be fine?

A. As I said yesterday, the devices to be used are different. You need a pair of torches and if you want to do it on the ceiling, it will be quite difficult,

because it is heavier, the device. But then for an LPG torch, it's lighter.

Also, at law, you don't need to have a licence to use gas for the welding.

Q. And then, within a particular confined space, you can't have a large number of devices?

A. Yes, no more than two.

Q. You have also said that because -- if the workmanship is poor, then soldering will result in bursting of water pipes. Why is it that brazing can resolve the problem?

A. Why brazing can resolve the problem? Please repeat your question.

Q. Why brazing can address the problem of poor workmanship resulting in improperly or poorly connected joints. Mr Yin asked you a question and then he showed you the BS figures, trying to say that there isn't much difference between soldering and brazing. You pointed out that for soldering, if the skills were not good enough, then the pipes may burst, but for brazing there won't be a problem.

So please clarify, in terms of the skills, what is the difference?

A. I think there is some misunderstanding. I just want to say that for silver brazing, you still have to master the skills. The workmanship has to be good before the

work is done properly. It isn't that poorly skilled workers can rely on brazing to resolve the problem. Then, for soldering, if you use the LPG torch, the pipe won't break.

But then, in fact, for brazing, the pipe will break and that would be a great problem, if the temperature is too great. So you need to master the skills when using a gas torch.

Q. That's silver brazing; right? For Mr Yin, he said that if we talk about the lead-free solder, and when we talk about the brazing materials, the performance would be the same. But then we have to take into account the skill levels of the workers. So brazing would be safer. So it seems that brazing will make sure that there won't be the bursting of pipes as a result of poor workmanship. I think that's what Mr Yin was trying to drive at.

So please tell us why brazing would be better, in the light of the poorer skills? Because it appears that we have this impression that poor workmanship and brazing would be fine.

A. Well, when I answered Mr Yin's question, we were saying that -- I don't think it is right for me to disclose the name of the housing estate having the water pipes burst. In fact, we have got feedback from our trainees. We

knew that for a particular housing estate, water pipes burst at many different points. Many households were affected. Then we observed that for the ensuing projects, the developers gave up soldering and opted for or brazing for the water supply system.

Q. So that's what you have observed in relation to the change, but do you understand the reason behind the change? Mr Yin suggested that it had got nothing to do with the different material, because in terms of withstanding the pressure, the performance would be the same, and they could also withstand the same temperature. He would like to find out the reason.

A. Well, first of all, hot water heaters at home, usually the temperature is just 70 per cent, not 100 per cent. So for the water temperature and pressure, for soldering, I think it can withstand the temperature and the pressure. But then, in the scenario when the workmanship is poor, when they test the pressure they use cold water rather than hot water, so the water is not hot, so maybe the pressure can be withstood. So maybe the supervisor will be happy with the result.

However, when the households use the hot water, the hot water temperature may attack the most vulnerable point and then the water pipes may burst.

Q. But the same problem could happen with brazing?

A. I have never heard about that problem with brazing.

Q. So, in other words, the developer decides to go for brazing?

A. We haven't heard from our training that there have been problems with brazing.

CHAIRMAN: So you think the performance data are the same, but you haven't encountered problems.

MR SHIEH: Let's look at page 40193. Please look at II and III. 30 degrees, 110 degrees of water temperature. You can also look at IV, V and VI, for brazing, the three readings, different pressure readings. And also maximum water temperature 30 degrees, 65 degrees and 110. You can see that in III and also V, if pressure withstood, it's the same. But can we make such comparisons like that? Can we compare II with IV, the comparison of the data?

A. I don't know the purpose of compiling this table.

Q. For the first one -- you know the reading, the data are the same, but are we talking about materials belonging to the same class?

A. Well, for lead-free soldering and for brazing, the performance, the results are the same, if you look at the data in the table.

MR SHIEH: Thank you.

MR YIN: May I ask a question arising from the questions by

Mr Shieh?

CHAIRMAN: I'm afraid not. I think that's all.

Okay. The answer is no.

Thank you, Mr Li.

(The witness withdrew)

Are we going to have Mr Lam?

MR SHIEH: Let's take a break.

CHAIRMAN: Thank you.

(11.18 am)

(A short adjournment)

(11.37 am)

CHAIRMAN: Mr Wong.

We need to ask Mr Lam to make an affirmation or oath. You need to do it again.

MR LAM TAK SUM (re-sworn)

CHAIRMAN: Thank you.

Cross-examination by DR WONG (continued)

DR WONG: Mr Lam, good morning.

A. Good morning.

Q. I am from the WSD. You said that you resigned in 2010 from Ho Biu Kee, and then, on 17 January, you made a statement saying that the materials submitted by Ho Biu Kee is not the same as that submitted to the WSD. You thought it was a big problem and that's why you resigned. Do you recall saying that?

A. Yes.

Q. Before you resigned, how did you know that the materials were different from that submitted by you in WWO46?

A. Marks had been deducted from me, challenging why I didn't buy the materials accordingly. I don't know why they had used other ways to buy the materials for the construction site and there was no supervision. I didn't know how that was done.

Q. We will take it step by step. After filling out form WWO46, you knew what was put down in the form?

A. I suppose so.

Q. All right. On the construction site, when the materials were delivered, would you take samples? Did you try to find out actually what materials were delivered?

A. Well, another supervisor took care of that. It wasn't my work.

Q. In other words, as the licensed plumber, you didn't know what materials were sent to the construction site?

A. Well, let me say so -- we had division of labour. I was only responsible for signing the documents. As to the procurement of materials, it's the procurement and materials divisions that were responsible.

Q. According to your knowledge, as the LP, do you think that you have the responsibility to make sure that the materials actually used are the same as that in WWO046

submitted?

A. Yes, I do have the duty to do so, but the main problem is that when we go to the construction site, we may not necessarily have the form with us and check against the number, et cetera, or the brands.

Q. Well, step by step. You said that you had the duty. You may not have the document with you. But then you were an employee of Ho Biu Kee. If you ask Ho Biu Kee for the purchase forms and you want to check it against the WWO046, you could have done so?

A. Well, of course the company would not make a mistake by buying the materials. But it wasn't just making a mistake in one item only. All ten materials were not the same. By the time I knew it, that was one week before the completion. I didn't know what I could do, so perhaps the only option was to be fired. I thought about it. I had to talk to the company. I thought I couldn't help it, and I said I would resign.

Q. All right. If I may take you to Q/25, paragraph 3. It is said here that the sanitary fittings and the water taps company was responsible for procurement. Then, for the valves and the gates, Ho Biu Kee was responsible for the procurement. WWO046 were not followed. This is your witness statement. Are you talking about Kai Ching Estate?

A. Not just these two sites. I had discovered that earlier on. But at that time, the construction company would only deliver the materials one week before completion.

If they had come earlier, if you want to have the completion form, I have to put it in well in advance, so as to make up for the shortfall in time. So I wasn't able to check what was delivered. As soon as it was delivered, it was done.

Q. So you didn't have the opportunity to see it?

A. Well, there was a lot of work going on that had to be done. On the construction site, that wasn't the only thing to be done. We were responsible for a lot of water-supply-related paperwork.

Q. All right. That's your answer. Let me move on to something else.

When you answered the question asked by Mr Khaw, you told us that when you sat for the licensing exam, you said that lead-free solder had to be used, and it's also provided for in the law. So you told us that you knew that you had to use the lead-free solder.

A. Well, when I took the licensing exam, this wasn't properly, formally announced. It was in 1993 that it was announced. Back in the 1980s, when I took the exam, there wasn't the requirement.

Q. So you knew that in 1993. Let's look at another

paragraph. C19.7, page 14793, paragraph 12. It's the notes of meeting between the WSD and you. Line 3, please read from line 3:

"Mr Lam said the soldering material was procured by his company's procurement department, so he thought that it wouldn't be appropriate for him to examine the soldering material and he did not know the origin of the soldering material."

Why do you think it would be inappropriate for you to check whether the soldering material was suitable because it was procured by your company?

A. Well, I'm a licensed plumber. I could only trust that it was okay, and it was subject to site supervision. We had to trust the company on that count.

Q. You knew it should be lead-free and the material was procured by the procurement department. You as the LP did not have the responsibility to check?

A. Well, there was no reason for me to check the material. There are so many hundreds; I could not check the materials for problems. It simply could not be done.

Q. All right. Let's turn to Q/11. This is your first witness statement. Paragraph 19 -- it's in small print but you can see it:

"When I took the examination, there was nothing on heavy metals. There was no course taken by me on heavy

metals."

The next sentence:

"Should not use solder strips for connection because heavy metal is contained."

No use of solder strip. So you knew the difference between solder wire and solder strip? Because solder strip contains lead.

A. Well, if you burn some metal, if you do it manually, it is not going to be done appropriately. If you use a torch, you don't know the correct temperature to apply. So you cannot do a good job. So I had doubts.

Q. Let's pause here. So you are changing your observation a bit. You are just saying that if you have to burn something on the site, it will not be appropriate?

A. Well, how can you tell whether it's the right temperature? People will think that as long as it melts, it's okay.

Q. When did you start to have this doubt?

A. Of course, when I was doing this, I was rightly reprimanded by my master for this. We should apply tin only when the temperature is right. So I just don't know how this can be done professionally.

Q. Of course you saw workers using a torch?

A. There's no way I could stop it. They were paid. As long as it's waterproof, I couldn't say anything.

Q. Did you tell Ho Biu Kee that this could not be done?

A. No, of course not. I'm not an expert. I could not say that the company's workers should not do this. I'm just a licensed plumber.

Q. Did you have to teach the workers to do soldering?

A. Well, they attended a craftsman course run by the CIC.

Q. But you knew it was not right?

A. It was just my own opinion. I could not speak for the entire industry.

Q. The solder strip should not be used, according to your statement, because of the presence of heavy metal. But even for lead-free solder, there's still heavy metal. So why did you say that solder strips should not be used because of heavy metal?

A. We are talking about heavy metal use in heavy industry. It's seldom used in drinking water plumbing. 30 to 40 years ago, the pipes came with a lead ring inside. They were made in the UK. I don't quite understand how the current practice came about.

Q. All right. You state that licensed plumbers do not know much about heavy metal. Are you talking about yourself or licensed plumbers generally?

A. Well, I didn't take any course on heavy metals. If I had, I wouldn't be a plumber.

Q. This statement relates to Kai Ching Estate and Kwai Luen

Estate. We were interested in finding out what had happened to Kai Ching and Kwai Luen. You state in this paragraph that licensed plumbers do not know much about heavy metals, therefore the problems and loopholes were created.

There's only one licensed plumber for Kwai Luen and Kai Ching. So you mean you did not know about heavy metal, or are you talking about licensed plumbers generally?

A. I was talking about myself.

Q. WWO046 -- when you want to judge whether Ho Biu Kee used the right materials, you must have some knowledge on heavy metal to start with? And lead is a heavy metal.

A. I'm talking about the time when I took the licensed plumber's examination.

CHAIRMAN: So what does the term "heavy metal" mean to you?

A. I'm not knowledgeable about the metal content in the material, or the nature of metal.

DR WONG: All right. Let me turn to another question.

Mr Khaw showed you some document from the WSD, a circular issued by the WSD in 1990. It's C3, page 2422. This is a WSD circular issued to all licensed plumbers, talking about supervisory work. Although you don't have to be hands-on in doing the work, but you have a supervisory role; do you know that?

A. Well, there will be a need to communicate.

Q. It says here:

"(In English) I would like to remind you that you should not hand over the plumbing work for which you have signed Waterworks Form G to any other person so as deem to transfer the responsibility for supervising the work unless the person to take over is himself a licensed plumber and has obtained the approval of the Water Authority through submission of a fresh Waterworks Form G."

So my question -- you know English; right?

A. A little bit.

Q. You can read this very well; right? Do you agree that as a licensed plumber, you have a responsibility to supervise the work? You have to supervise the carrying out of the plumbing works; don't you agree?

A. That's very general. I have to make sure that they comply with the law, and whether the locations are right and the test can be carried out.

Q. It's not my sole responsibility. There are other people involved in the process. So how could you supervise the works to make sure that the right materials are used?

A. That's the consultant, the architect and the procurement people of the company, and we have to make reference to the form that we have to submit to the WSD.

Q. So you mean you have to carry out the on site supervision of workers, to see whether the installations are properly done?

A. Yes. If a test cannot be carried out, then subsequently completion will be impossible.

Q. In 2010, after you resigned you still signed more than ten WWO forms.

A. Well, it's the practice of the Housing Department that a site would cover both housing project -- a park or public toilet is covered by the same form. So you may think that I have signed many forms.

I might have worked in a dozen or so sites. I just want to make it clear.

Q. Tell us what you know.

A. The forms were signed two years prior to acceptance test. After 2010 the sites encountered problems and they had to find a successor first before I could resign, because I had to sort things out first.

Q. So you were worried, for the forms you signed after 2010, that substandard material were used?

A. Well, I think I have said in my statement. There was no way I could stop it. I could only resign.

Q. Did it occur to you that you should tell the WSD, "The form I filled in was not quite correct"?

A. I did not have the chance to do so. So that's just like

lodging a complaint against myself, if I were to talk to the WSD.

DR WONG: I have no other questions.

Cross-examination by MR PENNICOTT

(All questions from Mr Pennicott were in English)

MR PENNICOTT: Good morning, Mr Lam. I represent China State and I have just got a few questions for you on two topics.

First of all, Dr Wong asked you a couple of questions earlier about your resignation from Ho Biu Kee in July 2010. Do you recall those questions?

A. Yes.

Q. Which project was it that triggered your resignation from HBK?

A. In another statement, I have already set out all the information.

Q. Perhaps you can help me with this. Is it at page Q1/27?

A. Yes, correct.

Q. Does it follow from this page, Mr Lam, that it could only have been the projects mentioned at 3(A) and (B), because they are the only ones that are before 2010, when you resigned?

A. That was before the resignation. We are talking about the dates of completion here.

Q. Yes, and so I ask my question again: looking at that

list, which of these projects triggered your resignation in July 2010 from Ho Biu Kee?

A. Well, it wasn't just because there were problems with such projects. I had been disciplined by the WSD before. I had been given demerit points. I found that there were more and more problems, so I thought I could not go on.

Q. Mr Lam, are you able to answer my question or not?

A. Please put your question to me again. Maybe I didn't get it clearly.

Q. If you resigned in July 2010 -- and we have seen your resignation letter -- it must follow, Mr Lam, that the project that triggered your resignation completed prior to that date. Do you agree?

A. The Tuen Mun Police Quarters.

Q. So that's the project that triggered your resignation, is it, (B)?

A. More than that. Hung Hom Estate as well.

Q. Mr Lam, that can't be right, can it? Because we can see you have a date there of 4 January 2011, which is after the date of your resignation, so that simply can't be right, can it?

A. It is because work started two years ago. Works commenced two years ago. When something was found, it means that it was the time when we had to report the

completion of works.

Q. The other problem with that evidence, Mr Lam, is that there's other evidence that shows there's no deviation in materials on Hung Hom at all. Were you aware of that?

A. No. Materials not matching, first of all there will be demerit points against me, and also there wouldn't be approval for the site.

Q. All right. Let's move on. I hope the rest of the questions I want to ask you I can do by reference to page Q1/44.

Mr Lam, that should be a letter dated 6 October 2015, signed by you and sent to the WSD. Is that correct?

A. This letter wasn't actually for the WSD. It was addressed to Ho Biu Kee. I said that if they continued, I would send to the WSD. I was asked to hold it. I was asked to give them time.

Q. Mr Lam, the top left-hand corner, does it say, "To: Water Supplies Department"?

A. But then the letter was given to Ho Biu Kee first. I said in this case I was going to send to the WSD. I did say so. But actually the letter wasn't sent out. It was only delivered to it.

Q. So you delivered this letter to Ho Biu Kee, and you

think that it wasn't sent to the WSD; is that right?

A. I had a meeting with them. I said that out of respect I showed the letter to HBK. I emailed it to HBK. I didn't send it to the WSD. I was asked to give them time, to see if they could find a way to resolve the problem. So I didn't send it to the WSD.

Q. Okay. Are the contents of the letter accurate?

A. Of course. Of course. The documents were changed. I could not know, I couldn't understand, I didn't know what authority they had to change the materials.

Q. Let's just look at a couple of aspects of this letter, Mr Lam.

First of all, it's headed, "alteration of materials on site"; is that right?

A. Correct.

Q. And it is dealing with two separate premises or projects. For short, Kai Ching is number 1 and Kwai Luen is number 2; is that right?

A. Correct.

Q. Then what you say is:

"WWO46 part I and part II and the material lists of the above two sites had been approved, but Ho Biu Kee did not purchase materials in accordance with the annex in the WWO46."

Now, Mr Lam, I'm only interested in Kai Ching. When

did you first know that Ho Biu Kee had not purchased materials in accordance with the annex on Kai Ching?

A. It wasn't I that came to know it. HBK would like to change the materials, and the architect's approval was required, and then I knew. I was on the site; I was informed by the WSD.

Q. I will ask my question again, Mr Lam, and please listen carefully. If you recall, when did you first know that HBK had purchased and installed materials on Kai Ching not in accordance with the annex?

A. The form was given to me by the WSD. I didn't know what was the brand used instead. There wasn't a list setting out the alterations. The architect didn't inform me and there wasn't any annex to give me the brands used instead.

Q. Mr Lam, who told you that the materials were not in accordance with the annex?

A. It wasn't that no purchase in accordance with the schedule. The WSD said that the materials didn't match the list.

Q. The WSD said that?

A. The WSD sent a letter to me.

Q. When did they send a letter to you?

A. We have to check.

Q. Mr Lam, can I come at this way: could you please be

shown bundle C7.1, page 5125.

A. Yes.

Q. Mr Lam, this is part IV of WWO46. You signed it on 3 March 2013; do you see that?

A. Yes.

Q. As at 3 March 2014, when you signed this form, part IV of it, did you know that there were materials not in accordance with the original annex?

A. I didn't see it.

Q. You didn't see it. When you signed this part IV form, part IV of this form -- I put it to you again, Mr Lam -- did you know that there were non-compliant or non-matching materials with the original annex?

A. Well, we signed a list and we had to comply with that list.

As to what was added, that was something extra.

Q. Mr Lam, on the original list -- we can have a look at it if you want; it's in the same file, starting at page 4753. C7.1, page 4753. This is the original annex, itemising 35 pipes and fittings. Do you see that?

A. Yes.

Q. When you signed part IV on 3 March 2013, did you check to determine whether these materials had been purchased and installed or not?

A. Well, if the company had complied with the requirements in this list, then it would not have been the case that some other materials were there. There were many supervisors on the site. How come that no one knew about it, no one talked about it? It's only when the WSD sent a letter, then it was found that this had happened. Had the procurement been made in accordance with this list, then there would not have been this loophole.

Q. That I understand, Mr Lam, but the question is: did you know that there had been non-compliance as at 3 March 2013; "yes" or "no"?

A. For this form, everybody on the site of the company reported the completion. It wasn't I alone that put down the signature.

Q. That's not my question, Mr Lam, and I think you understand that that's not my question. You have referred to various conversations that were had on site in relation to Kai Ching; HBK were involved, China State were involved, the Housing Department was involved in these conversations. They didn't take place, did they, Mr Lam, because you didn't know as at 3 March 2013 that there was non-compliance? You just didn't know, did you?

A. Let me put it like this. When this document was

prepared, it was not necessary for me to be with the architect. I was notified that there would be the acceptance test, and there's the need to pass the test. They wanted to know when the occupation permit could be obtained.

Q. Mr Lam, do you agree that at 3 March 2013, you did not know that there had been non-compliance with the original annex?

A. I cannot remember.

Q. Just one last question, in light of that answer. Can I ask you to go back to Q1/44, please. If you would be good enough, please, to look at remark (2), the penultimate paragraph. You say there:

"If materials had to be altered at such a stage, the contractor and the Housing Department said that it would affect the inspection and handover progress" -- and then the important words -- "and also said it would be fine if the materials complied with BS [British Standard] ..."

Mr Lam, when you signed part IV on 3 March 2013, did you check that all the materials on the annex complied with the British Standards?

A. Back then, yes, British Standards. But the brands were different.

Q. I will ask my question one more time, Mr Lam: did you

check, on 3 March 2013, that all the materials in the annex complied with the British Standards; "yes" or "no"?

A. They installed the wrong brand, although it's British Standard, that's back in 2013.

MR PENNICOTT: I keep to my promises.

CHAIRMAN: Any re-examination? Anything from other people?

Thank you, Mr Lam. You can go now.

WITNESS: Thank you.

CHAIRMAN: Let's take a break, a ten-minute break, for Mr Lam to leave.

(12.19 pm)

(The luncheon adjournment)

(12.28 pm)

MR NIP: Chairman and Mr Lai, my first witness is Mr Lo Wing Hong.

MR LO WING HONG (affirmed)

CHAIRMAN: Please take a seat.

Examination-in-chief by MR NIP

MR NIP: Mr Lo, you have prepared a witness statement for this Inquiry. Please turn to your statement. There are more than 20 pages. Please turn to page 22. Can you see your signature?

A. 26?

Q. 22. Is that signature yours?

A. Yes.

Q. Page 23, again, we can see your signature?

A. Yes.

Q. You want to make a few amendments, as I understand the case to be, but I must first of all read out the original statement first, before I move on to your amendments.

(Statement read in English up to paragraph 13)

First, FT, full-time, with the code 204. That course is known as plumbing and pipefitting. The duration is one year, and the entry requirement is completion of primary 6 or equivalent.

Second, PTE, part-time evening; Code number, 216; Course, Plumbing and Pipefitting; Duration, three years; Entry requirement, completion of primary 6 or equivalent.

(Paragraphs 13 to 14 were read in English)

First, PTDR, with code 0266; Course name, craft studies in plumbing; Duration, one year; Entry requirement, trainee from Construction Industry Training Authority Centre; Awards, draft cert; Offered by HWTI.

Second, PTE; Code, 0286; Course, plumbing and pipefitting; Duration, three years; Entry requirement, completion of primary 6 or equivalent; Awards, craft cert; offered by MHTI and HWTI.

(Paragraphs 14 to 15 were read in English)

PTDR; Code 0276; Course, Plumbing and Pipefitting (Apprentices); Duration, three years; Entry requirement, completion of primary 6 or equivalent, sponsored by employer; Awards, craft cert; Offered by MHTI.

(Paragraphs 15 to 17 were read in English)

First, PTDR; Code, 0266; Course name, Plumbing and Pipefitting (Apprentices); Duration, three years; Entry requirement, completion of form 3 or equivalent and sponsored by employer; Awards, craft cert; Offered by HMTI, HWTI (KCTI from 1983 to 85 only).

Second, PTE; Code 0286; Course, Plumbing and Pipefitting; Duration, three years; Entry requirement, completion of form 3 or equivalent; Awards, craft cert; Offered by MHTI and HWTI.

(Paragraphs 17 to 47 were read in English)

Time to have a lunch break?

CHAIRMAN: Why don't we have a lunch break, since we will have questions for the witness. So we'll come back at 2.30. Thank you.

(1.06 pm)

(The luncheon adjournment)

(2.31 pm)

CHAIRMAN: Please continue.

MR NIP: Mr Lo, before the lunch break, we stopped at

paragraph 47. I will continue with paragraphs 48 and following.

(Paragraphs 48 to 59 were read in English)

I have just read out your witness statement. I understand that in a few places you would like to have some rectifications.

Page 2, paragraph 6, please. The second line from the top, "Areas 6, 7, 8, 10 and 11", I understand you would like to add something to it.

A. Correct.

Q. Please tell the chairman.

A. "Areas 6, 7, 8", I would like to insert "9", then "10 and 11". Mr Leung and Mr Chan have a witness statement respectively to cover such areas.

Q. Please also go to page 21, paragraph 57. Again, 6, 7, 8, 10 and 11 -- again, you would like to insert "9"?

A. Correct.

Q. Please go to paragraph 15 on page 6. Under the table, you have the reference to the Apprentice Ordinance. The appropriate name should be "Apprenticeship"?

A. Yes. Please have it rectified.

Q. Paragraph 35 on page 13. The fourth line from the end of the paragraph, you refer to annexure 9. It should have been annexure 11?

A. Correct, 11.

Q. Other than those rectifications, everything you said in your statement is true and correct?

A. True and correct.

Q. Would you like to adopt this statement as your evidence in this Inquiry?

A. Yes.

Q. I have just a few supplementary questions for you. Please go to paragraph 47 of your statement. You find it on page 18. You refer to minute 8.1 of the liaison party meeting. I will call it the liaison meeting.

You refer to annexure 11. If I may refer to annexure 11.

Please take it out for Mr Lo.

CHAIRMAN: Which page, please?

MR NIP: I would like to ask Mr Lo to go to the minutes for the year 2004 in annexure 11.

CHAIRMAN: Can you name a page? Has it been paginated?

MR NIP: Mr Chairman, I'm sorry, I don't have the pagination.

Page 482. December 2004, the notes of meeting. Can you find the paragraph?

A. Yes.

Q. 8.1, as referred to in your statement, it should be on page 3 of this set of minutes. Can you find it?

A. Yes.

Q. As you mention in your statement, it's mentioned here that Mr Yip, your instructor that is, informed all students to use lead-free soldering material.

A. Yes.

Q. It's mentioned in 8.1. Was there any follow-up action in subsequent meetings?

A. Yes. There was an engineer from the WSD attending this meeting, Mr Ho. He asked our instructors whether, in our programme, we taught our students to use lead-free soldering material. After this is mentioned, there was some follow-up in the next meeting. Please turn to --

Q. I think it's the one in 2006, the following page. This is the 8 March 2006 minutes of meeting, for that meeting.

CHAIRMAN: Page number, please?

MR NIP: Page 483, Chairman.

If you turn to page 484 -- Mr Lo, can you see some record of the follow-up action taken?

A. It should be 483.1. This is paragraph 2.2, "Re: 8.1". Referring to the minutes of the last meeting, paragraph 8.1 of the previous set of minutes, Mr Ho, the engineer, asked our instructor, Mr Yip, whether there was any reminder given to students on the use of lead-free soldering material.

So Mr Yip made a report. Instructors at that time

thought there should be some way to test whether the soldering material contained lead. We tried to find such testing method but we failed to find any. So, at that meeting, our instructor asked Mr Ho from the WSD to help us, and Mr Ho's advice was we should try to find some information on the appropriate test in a UK website.

Q. There was another follow-up, as I understand the case to be. Page 486, 2.1.

A. Yes. It's matters arising from paragraph 2.2 of the previous minutes of meeting. There was a report by Mr Yip saying that after the search, they could not find any testing method. Mr Yip reiterated that in all the teaching materials, students were given clear instruction that lead-free soldering materials should be used.

MR NIP: Thank you.

I have no further questions.

CHAIRMAN: Mr Khaw?

Cross-examination by MR KHAW

MR KHAW: On the last point, that is in the working party meetings, there were discussions on lead-free material.

Please refer to 482. Mr Ho, I think he is from the WSD. If we look at the list of attendees, on page 480, Mr Ho is an engineer from the WSD.

A. Yes.

Q. And other people -- included people from VTC.

A. Right.

Q. Mr Yip is the one from Tuen Mun, the construction department, assistant lecturer from your Tuen Mun campus.

A. Right.

Q. It said that "(In English) all students have been taught to use lead-free soldering material in workshop practice. Catalogues would be sent to WSD for information."

What catalogues are those?

A. I guess -- I am just guessing -- it should be catalogues of soldering material. I did ask people who had attended the meeting, and some had already retired. We could not find any catalogues now.

Q. That's why they are not annexed?

A. Correct.

Q. With regard to this question of the representative of the WSD, whether lead-free soldering material was used, and then in answering questions from the other counsel, there were -- on two occasions, 483 and 486:

"(In English) Mr Yip reported that on site testing material of lead soldering material in pipe connection has been thoroughly searched. However, no such method

could be found in the current HK market."

So the WSD representative raised this point, and he had doubt. Did you search your course materials to see if there's anything on this subject?

A. The first time the WSD representative raised this was in 2004, and the lecturer confirmed that the instruction had been given to students on the use of lead-free soldering material. Your question is whether it was the practice before 2004. We cannot find any record to that effect.

I have called some retired colleagues and they said that prior to 2004, it was also taught in the courses, and students were told clearly that lead-free material should be used.

Q. I am going to go over some details in due course. But let's first of all look at the background.

Are you still head of the construction department of IVE?

A. Yes.

Q. In 2015, you were also on the advisory board of the licensing of plumbers, starting from 2015. It's for a term of two years, so you still are a member of that board; right?

A. Correct.

Q. But this is the board, right, the advisory board, and in

terms of membership, apart from you, from VTC, we have other people from the trade?

A. Yes.

Q. Professional people as well?

A. Yes.

Q. And also a representative from the main contractors?

A. Yes.

Q. What about people representing property management?

A. Yes.

Q. Was the chairman someone from the WSD?

A. No.

Q. Who's the chairman? What's the trade or profession of the chairman?

A. It was a very experienced people in the construction industry.

Q. How often do you meet?

A. The first meeting was convened in September. The next one will be convened on a needs basis.

Q. So there's no timetable for that, no schedule for that?

A. No.

Q. In September, that means after the lead in water incident was exposed, did you discuss the licensing system of plumbers?

A. Yes.

Q. Can you tell us what was discussed?

A. The content is confidential. But some are already in the public domain. For example, the demerit points system -- the penalty points system, rather. It has been in place since the 1980s. If the workmanship or work quality is such that it contravenes the regulation, points would be deducted. If you get 10 points, you get a warning letter, and then you can also be deregistered after two warning letters have been issued. Then we issue circular letters to inform the trade, and our course contents will be supplemented appropriately.

Q. In what way?

A. We will talk about management. At present, the plumbers' course has two parts. First of all, craft certificate, on skills, and there's a module on management; construction technology covers the arrangement of site work and management of site work. Then, when they attend the short course, for the licensed plumber examination, then, after passing the examination, the person will be registered as a licensed plumber.

But the nature of work has changed over the decades since the licensed plumber system was introduced, because of the changes in the site environment, and very often the licensed plumber would have to be involved in supervision and management. That's why we would like to

beef up these components in the training programmes.

Q. So they would like to enhance the role played by the licensed plumber in management and supervision on site?

A. Yes.

Q. What else was discussed at the advisory board regarding the LP system?

A. There was some discussion on the requirement of a continuous professional development for the purpose of licence renewal. The advisory board has given recommendations to the WSD. The WSD has discussed the matter with the VTC.

Q. So your preliminary finding is that there would be a need for such continuous development?

A. Yes.

Q. Well, in your statement, you had provided details about the contents of training programmes over the years, and you have provided the Commission with the prospectuses and training schemes, and so on.

With regard to the licensing of plumbers, in the Waterworks Regulations, you do know what they are about; right?

The regulations have been amended over the years, so let's look at the current version. It's G1, page 284. Let's go to page 283 first. This is the current regulations. 33:

"(In English) Any person who --

(a) holds a craft certificate ..."

That is the craft certificate course, the first course to be taken.

A. Right.

Q. "(In English) ... in plumbing and pipefitting issued by the [VTC].

...

(c) holds an equivalent qualification."

Then there's an additional condition. I think it's the short course referred to in your statement.

A. Right.

Q. "... and who holds a certificate in plumbing services (Hong Kong) issued by the [VTC] or an equivalent qualification may apply for a plumber's licence."

Then the qualifications must have been obtained not more than five years prior to application.

A. Right.

Q. So data qualification won't do.

I would like you to look at an older version. A3, page 2520. Let's look at page 2519:

"(In English) Any person who --

(a) holds a certificate from --

(i) The Institute of Plumbing; or

(ii) The Registered Plumbers Association of the

[UK] ..."

You have certain qualifications. One of the qualifications is a certificate issued by the Morrison Hill Technical Institute. That's the case prior to 1989.

In your statement, paragraph 14, it says that in the early 1980s there were some courses called craft studies in plumbing, plumbing and pipefitting course, 0266 and 0286. The two codes are important. I will be referring you to them again later.

Then paragraph 15 tells of the period 1981 to 1983. There's another course, code 0276. Some of these courses will last for one year, some for three years.

So I want to know whether, by taking any one of them, you will then be qualified to apply for licensed plumber at that time?

A. I can't tell because this is the first time that I read this regulation. I can only answer questions in relation to the course design of the VTC.

There are different modes of study. 0266 and 0286, I think the difference lies in the mode of study. 0266, PTDR is part-time day release. For 0286, PTE, part-time evening. The mode of study is different but then the title award is the same. It will still be craft certificate in plumbing and pipefitting. Including

0276, again, it is a part-time day release course.

Q. Do I understand correctly, say for example, take paragraph 14, for 0266, it's a one-year course, part-time day release course; then we have another one, three-year course, part-time evening course. For the ranking of the qualifications, are they the same?

A. Yes. I can't tell what was the status in the society at the time, but currently, despite the different course codes, if the programme title is the same, then the title of the certificate awarded to you will be the same, and you will not spell out clearly the mode that you have taken for your study.

Q. Let's go to paragraph 17. It describes what happened between the years 1982 to 1985. You have 0266 and 0286. Both of them are part-time courses. So, for the awards, they are the same, that is craft certificate?

A. Correct.

Q. We understand that around about 1992, there were some changes, as you have mentioned, that the WSD issued a circular. I think at that time probably, to correspond with changes in the law, they have issued a circular. You will find the circular at page 57.

A. Yes.

Q. Page 57. First of all, it talks about:

"The existing examination system for licensing of

plumbers will be abandoned on 2 October 1993 and thereafter all applicants for plumbers' licence must possess the following qualifications".

So, first of all, let's take a look at (a), "(In English) Craft certificate in plumbing and pipefitting course (course 0266 or 0286)". What we have been saying all the time, that is all the way to the end of the 1980s, there hasn't been much change, so it has to be issued by the VTC after 1987. In other words, within the five-year sort of time limit, because it is a circular in 1992, so probably they would like to have a craft certificate obtained more recently.

Then (b) and (c) -- let's set that aside for the time being. Then (d):

"(In English) Certificate in plumbing services (Hong Kong) course (course 5267) issued by the Vocational Training Council."

A. Right.

Q. In your statement, you have also referred to this short course. If I may talk about the evolution of the course and try to confirm whether my understanding is correct, first of all.

At page 67, let's take a look at the course content. We are on 0266, and it applies to 0286 as well. First of all, it talks about taking the craft certificate

course. It is the 1996 version. When I match the dates, I think that's around about the time that you joined the VTC, Mr Lo.

A. You are correct.

Q. My question is, would it be the VTC responsible for drawing up the subject content, or did you have feedback from the industry?

A. In the year 1996, back in those days, under the VTC, other than technical institutes, and Morrison Hill being one of them, we had also got two technical colleges. At that time, I joined the technical college rather than the technical institutes.

Q. Understood.

A. After 1999, the technical institutes and the technical colleges were merged together to become IVE. So, for the drawing up of the course content for IVE and the technical colleges, I am familiar. But for technical institutes, and prior to 1999, as to the course schemes, I am afraid I'm not clear about that. So I have to make it clear from the outset.

If you ask me to guess how they drew up the course content, I think I can only make a comment based on my experience with the TC and the IVE.

According to the technical institutes and according to the existing system of IVE, if you want to develop

a new course, first of all you have to carry out a feasibility study. Then, in fact, for the feasibility study you need to consult the industry, to find out what has to be learned, and then you have to consult the major stakeholders, and then we have to find out how much is the demand in the market.

Q. Sorry, please continue.

A. If it is found to be feasible, then with the approval of the management, we'll move on to the second stage, that is the design of the course, we'll set up a course committee responsible for the design of the course.

The syllabus of the modules has to be set out. In addition, the assessment requirements have to be set out as well, like the assessment rules, whether you can have a remedial examination, et cetera. So we will set out everything.

After this step has been completed, there is still one more step, and you need the approval of the course committee, and it is called validation. There will be an independent panel, independent from the committee responsible for the design. We have someone from other departments within the institution and also outsiders, like those related to the industry.

Q. Maybe we can pause here. Let's take up the point about validation. I understand that you have a working party

with the WSD, and a discussion has also referred to the validation of your course.

I want to know how often does it have to be validated, or it will only have to be validated when there is a need?

A. Take this course as an example. In 1999, IVE was set up, so the earlier TI courses had to be validated. Therefore, in the year 2000, or rather 2001, there was a validation for this course.

Q. We can go to page 473. This is the minutes for the year 1999. In point 3.3, mention is made that 286 and 266 have to be revalidated before summer 2000 for the implementation of the new IVE courses. I think that's the point you were making?

A. Correct.

Q. Let's take a look at the course content. Go back to page 67, please. Can you see it?

A. Okay.

Q. Page 67, we have the common hand tools, craft techniques.

A. Yes.

Q. On page 67, under B, we have "Soldering"; can you see it?

A. Yes.

Q. "(In English) Understands the procedures of soldering.

2.1. Identifies the lead-tin solders.

2.2. Identifies the melting temperatures of lead-tin solders.

2.3. Identifies the uses of fluxes for soldering.

2.4. Joints copper bit work with solders."

First of all, I want to know, for this course, did you take part in the design of the course content?

A. No, I didn't.

Q. For this particular module, for this particular topic, things related to soldering, did you yourself teach?

A. No.

Q. For this course, I want to know, have you ever given instruction for this course?

A. No.

Q. This is about solder, so I think I would like to turn to page 70. That's about pipe connection, installation of pipes, what sort of materials to be used, et cetera.

Page 79, this is also related somewhat:

"(In English) Materials for plumbing installations."

A. Right.

Q. The main materials for plumbing installation, different sorts of materials are mentioned.

A. Right.

Q. I want to know the following. For you personally, in relation to the use of lead-free solder, personally

speaking, before the matter came to light, that is before July 2015, did you have knowledge about that?

A. No.

Q. Not at all?

A. I did not come across that in those days, no.

Q. What about the jointing of copper pipes? Did you know it, after this incident?

A. I wouldn't say I had no knowledge at all. Before I joined the VTC, I worked outside. If you would like to know whether copper pipes were used in those days, they were, mainly for hot water supply and for higher class buildings.

Q. What about the connection, like what sort of materials to be used? Did you have knowledge?

A. I didn't know in detail.

Q. Regarding the Waterworks Regulations, mention is made about the components and the materials and they had to meet the BS. Were you aware of that?

A. Yes, I knew it, when I was working outside, because we had to fill out the forms like WWO046, et cetera.

Q. What about the soldering materials having to meet the BS?

A. We didn't have to focus on such points.

Q. So you were aware of the need to meet BS?

A. Yes.

Q. But in relation to the use of materials for copper pipes and how they could meet BS requirements, you didn't know?

A. If I may also talk about the course document, the course document that you referred to, that's for 1996. You have pinpointed a number of pages. You also read out the soldering, lead-tin solders. Well, that's the earliest document which is comprehensive that we can identify. In the year 2001, when we had the first validation, you can see that there was a change in that by 2004, the course document was also changed.

Q. Let's look at the amendments made in 2001.

COMMISSIONER LAI: Page number, please?

MR KHAW: Page 166.

A. You can see here, "Soldering", "(In English) Describe the procedures in soldering". The colleague who amended this deleted any reference to tin-lead solder.

Q. Page 184.

A. You can see under "Soldering", there's no mention of tin-lead soldering.

Q. Can you tell us why those amendments were made?

A. Well, I wasn't involved back then. I cannot find any evidence as regards why. I can only guess. Suddenly the two words -- the term was taken away from the course material. The earliest one was in 1996. In 2004, the

course document reflects the meeting with the WSD and what should happen then. The teachers were aware of this.

Q. Let's look at page 316 for the meeting in 2004. Again, "Soldering". In terms of the wording, it's similar to that in 2004. So there's no mention of tin-lead solder?

A. The teachers in the technical institutes were aware of this and the syllabus was amended.

Q. But you were not involved in the amendment of the syllabus. You are not just looking at the document and trying to project or guess what happened.

A. Well, there was the changes here, and also it was mentioned in the minutes, and also, in 1997, in the examination, relevant contents were contained in the test.

CHAIRMAN: The year again? 1997?

A. Let me find out first.

1997. Page 571. Annex 16. It is an examination paper in 1997.

On page 573, question number 12, it's a multiple-choice question: tin solder's main component are -- there are a few choices, tin and zinc; second, tin and copper; the third one, tin and iron; and the fourth one is tin and lead. The correct answer is (b), tin and copper, not (d), not tin and lead. And also you

can see in question 18 the melting point of soldering material.

CHAIRMAN: And the answer is (a)?

A. I cannot find it.

Then there's the examination in 2002. It's true and false questions. It's a question about the characteristics of lead, true or false. One of the choices is true. Low melting point or poisonous. And question number 8, there's a question on what happens if the soldering material contains lead.

So the teachers back then did attach importance to the possibility of lead in solder.

MR KHAW: In 2004 or 2001, in terms of the course material, tin-lead solder was deleted. It might have to do with your meetings with the WSD. It may or may not be the case, but if you look at 482 --

A. When I said it might be related -- because at that time, the WSD officer raised this point, and our colleagues back then were very aware of this as an issue, and they were aware of the importance of whether the solder contained lead or not.

Q. This one is related to December 2004. That's Mr Ho of the WSD expressing concern about lead-free soldering. But there was some prior discussion before this meeting. Is it that according to your understanding that that

would be the first time your colleague had a discussion with the WSD on lead-free soldering material?

A. Well, I wasn't there. I really cannot answer the question. I can only show you that, from the documents I have found, there was such a discussion.

CHAIRMAN: Sorry, I have a question. In 2001, there was a change?

A. Yes.

CHAIRMAN: The older one, it was in 1996. So I have a question about this. We know that in early 2000, something happened, and as a result, leaded solder was an issue at that time. What happened in 1996, as far as you know? What happened in 1996? Because in your examination paper for 1996-1997, there were questions.

I can understand why did you make the change in 2001. What about 1996? Why did you change it, make the change in 1996?

A. I'm afraid I cannot answer this question.

CHAIRMAN: That's okay.

MR KHAW: Let's look at your statement. Paragraph 45, page 21.

Apart from the course materials, you have also got the teaching and learning packages, and in 2001, it was the first time you prepared such teaching and learning packages. You have given us such TLPs in annexure 14.

It says that the TLP was developed in 2001, and in 2015, new guidelines were issued by the WSD, and then you also amended your teaching materials.

A. Yes.

Q. Please look at annexure 14, page 517. Is that the earliest version of your TLP?

A. It was the 2004 version, not the 2001 version. This particular version was in use since 2004 up to July 2014.

Q. So this is the 2004 version. Let's look at page 563. Paragraph 4.1 says that in the TLP, soldering material is produced by mixing lead and tin, and also some tin, and it can be used as soldering material under high temperature. Then you mentioned British Standard, and there were three categories: A, lead 34 per cent, tin 65 per cent, antimony 1 per cent; and then B, lead 48 per cent, tin 50 per cent, antimony 2 per cent; and then C, lead 68 per cent, tin 30 per cent, and antimony 2 per cent.

So, for all the three categories, there's lead. So you have no particular definition for lead-free solder?

CHAIRMAN: Well, a lot depends on the use of the solder it's put to.

A. Yes, I have the same doubt. I talked to the teachers, including those who have retired. I was given to

understand that the notes have been used for many years, since early days. At first, soldering was not used on potable waterworks. It was used for the connection of water tanks or some air-conditioning pipes. The notes were in use a long, long time ago. But in the 1990s, by the end of 1990s, the teachers became aware that for the potable water plumbing systems, lead-free solder should be used. So, in delivering the course, they would stress the point that these soldering materials should not be used on potable or drinking water system. That's why, in the video presentation, in the examination paper, they have set questions.

MR KHAW: For the TLP, in writing, there was nothing about the use of lead-free solder in drinking water plumbing?

A. No, not directly. But indirectly, yes, you can find some references in the notes. The trainees will be reminded to comply with the BS, and you can see that one of them is BS 864 part 2, and this BS was referred to in the course. That is for potable water usage, the soldering material must be lead-free.

Q. In your statement, paragraph 22, please.

A. Which paragraph?

Q. 22, please. Yes, in paragraph 22, you refer to the establishment of IVE, and then you also talked about a new course code 55776 and 53776. Later on, you gave

an explanation for 55776 and 53776. I want to know whether they represent or they were the same as 286 and 266, because you had to adopt a five-digit course code; right?

A. Yes.

Q. I want to know, after completion of such a course, if somebody would like to move on to take a short course, and basically there's a licensing examination so that you become qualified to get a licence -- I think this is what you have said here.

Let's go back to the short course. Page 14, paragraph 25.

A. Yes.

Q. It was called 5267 in the circular of the WSD. Since you have to give it five digits, so it has become 56767.

In paragraph 20, you have the short course certificate. At first, it had got certified hours. Later on, the corresponding changes have been made.

I want to take you to page 478. Again, showing the discussion of the working party. 3.2 says that 5267 should change to 56767.

Page 475, 3.2, it says here:

"(In English) Mr KK Lo suggested separating 2567 into 2 new modules ... to reflect the passing rate.

The chairman recommended the followings for

discussion".

Please explain the following point:

"The short course 5267 might be considered to offer only one theoretical subject and the new entry requirements for the short course would be:

(i) Graduates of 53776/55776" -- those were the 266 and 286 given a new number -- "who registered as skilled plumbing workers under the Construction Worker Registration Scheme."

Then, first of all, it talks about being a skilled worker, and then "Holders of MIP" -- what is meant by "MIP"?

A. Member of the Institute of Plumbing.

Q. "(In English) Holders of MIP and registered as skilled plumbing workers under the Construction Worker Registration Scheme."

It appears that you have brought up one point. That is, you took either one of the two courses, 266 or 286. First of all, one has to be registered as a skilled plumbing worker, and then he may take 5267?

A. Well, it was a discussion. There was a suggestion, followed by a discussion. I think you need to go back to the previous paragraph, that is 3.2. Two groups of people took the short course, one with the craft certificate and four years' experience, the other have

an equivalent qualification, that is MIP. Now they have changed the name to Chartered Institute of Plumbing and Heating Engineering. They are different. For the craft cert people, they are very practical, so they did well in practice, but theory not good. On the other hand, for those from the institute, they had higher academic qualifications, they were fine with the theory, but then their practical was very poor.

Q. Please pause here. You talk about members of the institute having higher academic qualifications. Usually, what sort of educational attainments did they have?

A. Just a general idea, from the instructors, many of them had got a degree from universities. So they were strong in writing. On the other hand, they didn't have much practical experience. But then the statutory requirement was such that they were treated as being equivalent; they were allowed to take the examination.

So for paragraph 3.2, we presented the problem. KK Lo talked about the problem. He said that maybe we should split it into two parts, one called theory. For theory, who should take it? Well, separate it into two modules, one theory and one practical. So their intake requirements would be different. It is hoped that by taking up this suggestion, we can deal with the problems

of passing rates because the candidates are different.

But then, after elaboration, in paragraph 2.3, the suggestion wasn't taken up and we just maintained the practice.

Q. So at that time there was a suggestion to separate the work into theory and practical?

A. The practical part wasn't necessary. If someone has registered as a skilled worker, so he only has to take the theory. So there was this discussion. But then in paragraph 2.3, the result was that the idea wasn't adopted.

Q. So the idea was not adopted, and the prevailing system was retained. So after taking 266 or 286, you can move on to take the short course 5267?

A. Correct.

Q. In other words, you don't need to be registered as a skilled worker?

A. No.

Q. But you need four years' experience; right? Then, if you have an equivalent qualification, like a holder of MIP, does it mean that they can directly move on to take the short course of 5267?

A. Yes, plus four years' experience.

MR KHAW: Four years' working experience.

CHAIRMAN: Let's have a break. Ten minutes.

(3.37 pm)

(A short adjournment)

(3.53 pm)

CHAIRMAN: Mr Khaw, please continue.

MR KHAW: Before the break, I asked you some questions about the short course and whether it's related to the skilled worker qualification, and you said that the proposal was not adopted at that time. If you want to enrol on the course 5267, it will not be related to any skilled worker qualification or semi-skilled worker qualification; am I correct?

A. Correct.

Q. Page 19, paragraph 43. Paragraph 43 is on the learning contents and the changes from 1996 to 2004, and we looked at some of those a moment ago. In 1996, on page 20 of your statement, there was something on advantages and disadvantages of different pipe materials.

It's page 82, 1.9.

A. Yes.

Q. "(In English) Compares the advantages and disadvantages of different pipe materials ..."

There's something on solder. Page 79. That's the version in 1996. If we look at the 2001 version, it's your page 20 of your statement, subparagraph (2). 2001.

It's page 166. We have looked at this. Soldering here. And also page 184. "(In English) Demonstrate the technique of soldering".

Just by reading the documents and the syllabus, there was nothing on soldering material, and also lead.

A. But this is a syllabus. It's an outline of the topics.

Q. Again, it's the same with 2004. Pages 316 and 324, and similar references as the 2001 course scheme, there was no specific mention of lead-free solder.

Page 317, your statement also refers to this. "References", number 2:

"(In English) Hong Kong Waterworks Standard Requirements, WSD, 2002."

Is it your understanding that these are just reference materials and you want students to maybe just read some of those?

A. Yes.

Q. What about the language competency of your trainees or students? What about English? What's the minimum requirement?

A. Form 3 standard is required. Earlier than that, in the 1980s, it's primary 6. So, for more recent students, form 3.

This is the syllabus. It covers the topics. Apart from the changes in the syllabus, we must also look at

the TLP, teaching and learning packages, which is more important.

Q. Actually, the TLP is written in Chinese?

A. Yes.

Q. Please look at the 2004 TLP. On the question regarding page 317 and the reference, Hong Kong Waterworks Standard Requirements, you did try to understand from retired instructors what was taught. Have you asked them what they covered in respect of Hong Kong Waterworks Standard Requirements back then?

A. Yes, we have learned a lot from Hong Kong Waterworks Standard Requirements. In the past, there were only nine chapters, there was no chapter 10. Then subsequently, I don't know when, but chapter 10 was added. We also listed chapter 10 in the syllabus.

Please look at page 316, number 3, "(In English) Pipes and valves", "Use of pipes and fittings -- HKWSR chapter 10".

Chapter 10 is mainly about the material to be used should comply with WSD requirements and also the BS standards referred to in the WSD website.

Q. So that's the reference to chapter 10 and also Hong Kong Waterworks Standard Requirements.

You have recently touched base with instructors. Did they explain in particular in relation to lead-free

content in the waterworks requirements?

A. When they were teaching about the soldering materials, that had been in use for long time, and that's for basic water supply systems. When they reach that part, they would emphasise that for potable water system, they have to use lead-free solder, and they would also play a video.

Q. In your statement, it is said that you have already followed this up with the instructors. Have you asked them as to since when they started to tell the trainees that it has to be lead-free for potable water supply?

A. I don't think I can tell you the exact year, but I did make enquiries with a number of them. My impression is that towards the end of the 1990s, they became relatively more concerned about this issue.

Q. End of the 1990s, before the year 2000; right?

A. Correct.

Q. Did you ask them, that is, when they explained the use of lead-free solder for potable water supply, did they show the materials to the trainees, did they give an explanation?

A. You can put this question to an instructor tomorrow. In his statement, he has already referred to it. Because he is responsible for the practical session, with both theory and practical sessions. For theory, you have the

notes. For practical, you see the physical objects and you have to do the practical work. Mr Leung Man is responsible and he showed the two materials to the trainees, leaded and lead-free. He would also explain to the trainees as to the scenarios under which they would use the leaded solders, that is electronic equipment and non-potable water supply systems. For lead-free, it has to be used for potable water supply.

Q. All right. I will follow this up with Mr Leung.

Lastly, in relation to the course, in your statement, please refer to paragraph 50 on page 23.

A. Yes.

Q. You were mainly talking about 56767, that is 267 that we used to hear about, that is about the short course, that is the most difficult one. Now you talk about basically it's a licensing examination course for 39 hours.

For the first paragraph, if I may follow this up with you, towards the end of this paragraph, you talk about "(Partially in English) the latest regulations and the WSD requirements on plumbing works are reviewed by a 32-hour lecture before the 2-hour written examination."

You talked about the significance of the TLP. For the 2014 TLP, here you said that "(In English) the candidates were be reminded to have all materials and

fittings complied with relevant British Standards and the WSD's requirements. It also states that all capillary fittings for copper joints have to comply with BS 864 Part 2. Though this standard has been superseded, clause 5.2 at page 2 ..." talked about it.

You also talk about "(In English) general usage and potable usage of solders ..."

Let's look at the latest version of the TLP. I think what you have been referring to can be found at page 625.

A. Yes.

Q. This is about the application for approved pipe fittings and the guidelines. Actually, what is said here is that if WWO46 has to be signed, then certain things have to be attended to.

A. Yes.

Q. First of all, WWO46, for the fittings and materials mentioned therein, do you know that it doesn't include solder?

A. I have become aware of it now.

Q. You know it, but you didn't pay attention to that in the past.

Now, when we look at the guidelines for the fittings, you need to be of one of the two categories if you would like to be accepted by the Water Authority.

That is, with the BS Kitemark or it has the approval of the Water Authority, saying that it is suitable for use locally. So mention is made about the British Standards.

From the paperwork, I don't think you refer to a specific BS for a specific material?

A. Well, for the 39-hour course, it is supposed to be an examination course. But then before the examination we have to make sure that they are up to the standard, so we want to give them the highlights. If you expect something very detailed, I think it can only be sort of explained in a three-year course. So for this particular chapter, this is the Standard Requirements, chapter 10.

In addition, on page 712, this is repeated here, that is in relation to the Waterworks Regulations, and we have mentioned schedule 2, and that's about the standards for the relevant materials.

As to whether we have talked about copper pipes as well as the requirements for soldering, please take a look at schedule 2, among which you see -- you find it on page 714 -- there are a few points here.

Points 13, 14, 15, 16, all the way down to point 16, that's about capillary joints and soldering joints. You have to meet the BS 864 part 2.

You have to understand one point. What is mentioned here is that a lot of materials are mentioned. All of them are important. For soldering, of course it is important, in particular, in the light of what has happened. At that time, and this was explained, it wasn't possible to highlight and explain each and every BS. Well, I think in light of what was regarded as most important by the industry, by the society at that time. Well, candidates are supposed to know everything.

Q. In your statement, in paragraph 50, you refer to the TLP. You have said that candidates have been reminded of the British Standards. There the differentiation between general usage and potable usage.

Well, from the paper, just now we were in page 625. There was no specific mentioning of this point. That is, whether it is for general usage or potable usage. Therefore, on the face of it, candidates have to know how to get hold of BS 864, and you will find it at page 734 in your folder. So unless he can find that, and then he would know about the general usage and the potable usage. Otherwise, from your TLP, I don't think you make a special point about the differences between the different usages.

A. Well, for the teaching notes, it provides general information to the candidates, so that they know where

to get the relevant information. They should have to understand everything mentioned there is important.

Of course here our focus is on soldering and lead-free soldering. In fact, all the BS mentioned there would be important. Had we copied each and every BS, it would become a very thick document.

Q. We need to mention this point because around about 2004, in December, you mentioned that the WSD at a working party meeting raised a point about lead-free solder.

A. Yes.

Q. This was highlighted. But it appears to me that despite raising the point, after the year 2004, the course design didn't highlight this point.

A. This is because the content was mainly based on the three-year craft cert course, and instructors will explain in a classroom, there would be the playing of the video. For the 39-hour course, that's simply to remind the statutory requirements.

Q. All right. Lastly, maybe we can go to annexure 15. We can play the video. I think we can play the video, a very short one. It would just be for three minutes.

A. Yes.

Q. Perhaps we should take a look of the last one first: preparing the materials and connection.

VIDEO DEMONSTRATING PREPARING THE MATERIALS AND CONNECTION:

"First of all, let's talk about how it can be done. First of all, you have to follow the drawing approved by the EMSD and then workers have to follow the measurements in preparing the materials. For the copper pipes, you have to tidy up or trim the edge, like girls making up, and then you have to deliver it to the site. If you have to bend the pipe, then of course it has to be a diameter 28 mm or below. Then you can do it manually or by a machine.

The important point is that you need to use the proper device. Anything that has been folded cannot be used.

To connect pipes, first of all, the plastic sleeve has to be removed for 50 to 70 mm, and then you have to rub clean the inside and outside surface, and then you apply the approved flux. Make sure that you mustn't use leaded solder paste or anything containing ammonia, because they are harmful to human health, and then you can have it connected. It requires skill before you can connect them. Before you heat it, use a wet cloth to cover those with a plastic sleeve, and then it won't melt when heated.

Then, for the connection, you have to make sure that the solder is filling up the gap, and then it will be done.

In the light of the circumstances of the construction site, we can either have it vertical or horizontal, for the jointing, but then it has to be evenly distributed and the excessive tin and the excessive flux has to be removed.

Then, if you use brazing, then the relevant acetylene has to be adjusted to the right amount, and then the heating should be even and then the solder and the solder rod has to be heated and then they have to be filled up fully until it overflows.

When the brazing has become hot, then you have to use the cloth to clean it. After the pipes have been connected, the supervisor must carry out sample testing. What is meant by properly connected? We cut it open to show you. Now, the joint and the pipe has to become one piece and then there won't be leakage. Then all the connection procedures should be completed before moving them to the floor, and then we can reduce the time spent on connecting them on the floor; that would hold up the other procedures.

Then the contractor has to produce a mock-up flat, and then they have to mark the alignment, et cetera, and then that would be something that is acceptable, and then the architect can tell whether the alignment, et cetera, is correct.

So it is like when buying a flat, if you want to check whether the show flat is good or not. Yes, installation of pipework is the same as purchase of a flat. You can't do a sloppy job. So you have to follow the drawings, you have to make sure whether the positions are correct, the architect has to give approval before installation can be carried out.

Of course, the contractor will have to transport the material to the right location. But for copper wires, before work commences, the plumber and the plumbing worker have to look at the plan."

Let's also look at the other two video clips before I put questions to you.

VIDEO DEMONSTRATING JOINTING OF COPPER PIES WITH INTEGRATED SOLDERING MATERIALS:

"There are two components here. One with lead embedded, one without. I will show you how to joint the pipes embedded with tin.

First of all, you have to plug in. For this part, we have to clean it with sandpaper. Why do we have to rub it? It's because the pipe might be rusted, so you have to wipe it clean.

Then we use some flux. It's for the lead-free soldering. The flux is for cleansing purposes.

Then let's have the fittings and components, and

clean the surface, the inside surface. And also apply some flux inside, for cleansing purpose again. After that, fit the two parts properly.

Now it's the jointing process. We use this LPG torch to heat it up. You see something silvery coming out from the joint. It means the solder is melting.

First of all, get the torch close to the solder, and then the joint, the place where you find the joint, apply the flame. Pay attention. You should get the torch away once you see the tin coming out from the joint.

Now we see the tin solder has come out. You can heat it up a little bit more to increase the temperature.

So the tin solder is forming a ring. Because of the presence of flux, we need to clean it with a piece of cloth.

So this is done, if you are jointing parts embedded with tin solder."

VIDEO DEMONSTRATING JOINTING OF COPPER PIPES WITH EXTERNAL SOLDERING MATERIALS:

"Now I'm going to show you how to join the parts without any tin embedded. First of all, this has to be fitted into the pipe, and then you have to clean this part. You have to use a sandpaper to rub the surface,

just like what we did. Because of the oxidation, we need to clean the oxide.

It's clean now. We have to clean the inside part of the other side, the inside of the other part.

After cleansing, apply flux. Apply a thin layer, and also the inside of this fitting. The two parts are jointed.

After that, connect to the location of the elbow.

We now need to apply solder. We must use lead-free solder. Again, we use a torch to heat up the solder, to heat up the fittings. Please don't heat up both the solder and the pipe, because the melting point of the solder is just over 200 degrees and it will melt easily and the solder will drop to the floor. So let's heat up the joint first. If it's hot enough, apply the solder. If the temperature is high enough, the solder will melt. If not, apply the torch to heat it up.

You can see that there's a ring all around. If you think that you should apply more solder, you should use more, and then allow the solder to seep inside. Then take away the torch, clean the flux.

So this is how we joint non-embedded parts.

Final inspection: This is the one where we are fitting without solder. You can see that the solder can be found around the circumference, and this is one with

soldering fitting embedded, and the solder will come out. You should see some coloured solder at the seam, and you can see it's a thin ring. For those when we apply lead, you can see the ring is thicker.

CHAIRMAN: The next one, AVSEQ.

VIDEO AVSEQ02:

"Copper pipes are most popular and most commonly used for potable water and other uses.

There are many fittings that you can choose. You can use many cost-saving techniques to install them, such as bending, you can have a T diversion; or soldering, tin alloy and other alloys; leaded solder, not suitable for drinking water or potable water, soldering.

For copper pipe jointing, you should apply flux first, assemble the parts, apply heat and solder, cool down and cleansing. When you prepare for soldering, you should use dedicated flux for the soldering. You should stir well before applying, and then on a clean surface apply a very thin and even layer of flux. It will remove the oxide and also wet the surface.

Do not apply too much flux. Do not allow the flux excessively to come into the inside of the fittings. You can turn the fittings to ensure that excessive flux will come out, and then you should remove excessive flux

before soldering.

Tin solder has a low melting point. You can use a torch. It's more convenient than the acetylene cylinder welding, for you can use compression joint, use a torch. You should apply the frame perpendicularly to the pipes. The time required depends on the size, and the heat should be applied uniformly to the circumference of the pipe fittings, and then you can apply the solder.

If the solder cannot be melted, you should heat it up, but do not make it too hot. At the right temperature, when the solder comes into contact with the copper pipes, it would melt, and it would melt like in the capillary movement. Because of capillary action, the solder will fill up the gap.

Do not use excessive solder. Excessive heating results in wastage of solder. You should use solder equivalent to the circumference of the pipe size.

There are also fittings with solder embedded. The same technique can be applied. You can take advantage of the capillary action, apply the heat. Then, when it cools down, the solder would be evenly distributed. But before it cools down, do not touch the pipe. You can use a wet cloth to clean the excessive solder and flux.

After soldering, it would be very strong and it can

withstand pressure even higher than that for the pipe itself.

Copper brazing is also popular. The temperature is more than 450 degrees, but the temperature will be below the melting point of the metal. It's like soldering. You heat up the joint so that the metal is melted, and through capillary action the soldering material will fill up the gap.

You can apply it to T joints, and the composition can be different, in respect of soldering materials and flux, and also the heating required will be different for different materials. It's either silver brazing or copper brazing. Silver brazing contains silver, and sometimes other metals are added to lower the melting point. You can use a copper rod and then there's no need to use flux. Copper and bronze or similar metals, then you need the flux. To connect copper and bronze, you need to have flux. When compared with the tin solder, the composition is different, so they are not substitutes for each other. It is water-based, and before you use it, you have to dilute it and stir it well.

For brazing, it is above 450 degrees Celsius, but not the melting point of the base metal, so you need a higher temperature. And in fact the oxyacetylene will

be right. But then you have to make sure that the handle, the holes and everything is working properly. To make sure it is even, the mouthpiece would be important. If it is too small, it is not economical, and it can only focus the heat on a particular point.

To make sure that it is working properly and efficiently, you have to adjust the volume of the gas to make sure that the frame is of the right strength.

Irrespective of the diameter of the copper pipe, like the soldering, first of all you need to heat the copper, and then the copper pipe and the fittings have to be heated together, and then you heat the joint until the hot part becomes dark red. If you want to know whether the temperature is right or not, you can put the tip of the rod slightly into the gap, and then it will melt. You have to remember that you need to use that temperature to melt the material, and the heat has to continue and has to be focused at the point of the joint. This promotes capillary action.

Then the melted filler metal can go inside. If you move around the joint, look carefully to look at the amount of filler material used. If you examine carefully, you can see that a small gap will be evenly distributed. After it has been completed, then the heat source can be removed. But then, for the melted filler

metal, before it's solidified, please do not come into contact with it, and you use a wet cloth to clean it.

In principle, the procedure is the same, if you use copper to connect with bronze. After heating up, you should focus on the fitting, to make sure that before you add the filler metal, the temperature is right, but make sure that the bronze is not overheated.

For tin or bronze or for copper, you need to make sure that you measure accurately the pipe, and then you cut the size, rough clean. And for soldering, make sure you use the right amount of flux. Remove excessive flux. The frame has to be of the right temperature. Then you use the solder material. When the joint has cooled down, you remove the excessive materials.

If you adopt what has been demonstrated, then the installing worker can use the proper technology to do the work, and then the copper pipes installed will be durable and then you don't need to worry about anything.

If you want to know more about what has been shown here, you can get the information from Copper Development Centre Southeast Asia."

MR KHAW: I think I have some questions for the video clips. I can ask you tomorrow.

CHAIRMAN: Yes. Mr Lo, please come back at 10 am.

MR SHIEH: If I may just talk about the arrangements for the

following week. Tomorrow, we will have VTC witnesses giving evidence, and then we understand that we have the trade association representative, to be followed by the WSD witnesses.

For the timetable for the witnesses, we haven't actually talked about the sequence. I think at one stage we have told the relevant parties that one of the expert witnesses, that is Prof Joseph Lee, may be available on either Thursday or Friday next week.

Having considered the matter, we believe that it is better to get all the evidence from the WSD witnesses -- that is, we should allow them to speak first -- before we move on to the expert witnesses of the Commission. Therefore, in the week following, we are going to get evidence from the WSD.

As to the exact sequence of the witnesses, we will inform the relevant parties. For the provisional timetable, we have already built in a sequence. It will be more or less the sequence that we will have during the hearing. As to whether there will be some slight adjustments, I think we need to talk to the relevant counsel.

For 15 to 19 February, certainly that will be devoted to the expert witnesses.

CHAIRMAN: All right. Let's resume at 10 o'clock tomorrow.

(4.37 pm)

(The hearing adjourned until 10.00 am the following day)

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