

UNREDACTED  
REBUTTAL TESTIMONY  
OF  
ERIC LOUNSBERRY

Engineering Department  
Energy Division  
Illinois Commerce Commission

Purchased Gas Adjustment Clause Reconciliation

Illinois Power Company  
2001 Purchased Gas Adjustment Clause Reconciliation  
Docket No. 01-0701

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1 Q. Please state your name and business address.

2 A. My name is Eric Lounsberry and my business address is: Illinois Commerce  
3 Commission, 527 East Capitol Avenue, Springfield, Illinois 62701.

4 Q. Are you the same Eric Lounsberry that previously submitted testimony in this  
5 proceeding?

6 A. Yes. I previously presented direct testimony in this proceeding, ICC Staff Exhibit  
7 2.00, with supporting schedules ICC Staff Exhibit 2.00, Schedules 2.01 through  
8 2.04.

9 Q. What is the purpose of your rebuttal testimony?

10 A. My rebuttal testimony responds to the rebuttal testimonies of Illinois Power  
11 Company ("IP or "Company") witnesses Mark Peters, Kevin Shipp and Timothy  
12 Hower.

13 Q. What recommendations are you making in your rebuttal testimony?

14 A. I continue to recommend that the Commission find the \$370,000 in additional gas  
15 supply costs that IP incurred as a result of its decision to reduce the peak day  
16 capacity of its Shanghai storage field imprudent. I also continue to support the  
17 two adjustments for imprudently incurred gas costs due to the Commission's  
18 findings regarding the prior reconciliation period, Docket No. 00-0714. In my  
19 direct testimony, I noted that the Commission had found the Company imprudent  
20 in Docket No. 00-0714 as a result of its decision to retire the Freeburg propane

21 facility and its method of selecting certain swing supply reservation contracts. I  
22 calculated that IP imprudently incurred gas costs of \$614,000 and \$2,000  
23 respectively during the instant reconciliation period as a result of those decisions.  
24 Based upon my review of the above topics, I recommend the Commission make  
25 a downward adjustment of \$986,000, to IP's 2001 PGA gas costs.

26 **Swing Contracts**

27 Q. Did IP provide testimony to dispute your recommendation to disallow \$2,000 of  
28 gas costs due to a continuation of the Commission's finding of imprudence in  
29 Docket No. 00-0714 regarding the method IP used to select certain swing supply  
30 reservation contracts?

31 A. Yes. IP provided the testimony of Mr. Mark Peters, IP Exhibit 2.1.

32 Q. What did Mr. Peters state in his rebuttal testimony?

33 A. Mr. Peters' testimony discussed the two swing contracts that the Commission  
34 found imprudent in Docket No. 00-0714. The two contracts were a Dynegy  
35 Marketing and Trade ("Dynegy") swing contract and a swing city-gate contract.  
36 In the instant proceeding I am recommending a disallowance of \$2,000 for the  
37 swing city-gate contract.

38 Q. Briefly summarize the events related to the Commission's imprudence finding for  
39 the two swing contracts in Docket No. 00-0714.

40 A. The Commission's Order in Docket No. 00-0714 agreed with my assessment that  
41 IP's contract selection criteria that chose gas supply contracts solely on the basis  
42 of reservation costs was imprudent and that IP should also consider commodity  
43 cost differences between competing bids when it selects its gas supply contracts.

44 The two contracts in question provided gas supplies to IP from November 2000  
45 through March 2001. My testimony in Docket No. 00-0714 noted that IP had  
46 incurred additional gas supply costs as a result of signing those two contracts  
47 versus the next best alternative for the months of November and December of  
48 2000.

49 Q. What were Mr. Peters' comments regarding the Dynegy contract?

50 A. Mr. Peters correctly noted that the Commission made a disallowance associated  
51 with the Dynegy contract in Docket No. 00-0714 for the period November 2000  
52 through December 2000. Mr. Peters then stated that in the instant reconciliation  
53 period for the period January 2001 through March 2001 this contract did not  
54 cause IP to incur any additional gas costs. Also, looking at the full term of the  
55 Dynegy contract, November 2000 through March 2001, Mr. Peters noted that IP  
56 did not incur any additional costs due to its selection of this contract versus the  
57 next best alternative. Mr. Peters' IP Exhibit 2.2 notes that looking at the full term  
58 of the Dynegy contract, IP saved \$4 versus selecting the next best alternative  
59 contract.

60 Mr. Peters then claimed that I transformed IP's single decision to enter in the  
61 Dynegy contract into two distinctly separate decisions for prudence review.

62 Finally, Mr. Peters claimed that the net benefit of the Dynegy contract must be  
63 considered in the calculation of any disallowance for swing contracts in this  
64 proceeding and in fact that IP should be allowed to recover the amount  
65 previously disallowed within 00-0714 during this reconciliation period.

66 Q. Do you agree with Mr. Peters' statements?

67 A. Yes and no. I agree an adjustment was made in Docket No. 00-0714 for  
68 additional cost that IP incurred as a result of signing this contract for the period  
69 November through December 2000. I also agree that IP's calculation shows that  
70 when considering the full term of the contract, IP did not incur any additional gas  
71 costs.

72 I also agree that the costs incurred as a result of the Dynegy contract are broken  
73 down into two distinct prudence evaluations. However, the use of two different  
74 evaluation periods is a result of the start and end date of IP's Purchased Gas  
75 Adjustment ("PGA") clause reconciliation and Mr. Lounsberry's understanding of  
76 the rules that govern a PGA reconciliation.

77 Q. Do you agree that the net benefit of the Dynegy contract must be considered in  
78 the calculation of any disallowance for swings contracts within this proceeding  
79 and that IP should recover the amount previously found imprudent in Docket No.  
80 00-0714 in this reconciliation period?

81 A. No. My disallowances are based upon the cost incurred within the applicable  
82 reconciliation periods. I am not aware of any rule or practice that would allow for

83 a recalculation, in the manner requested by IP, of events that occurred in a past  
84 reconciliation to a different reconciliation period. Further, I would note that to the  
85 best of my knowledge IP was not precluded from bringing up the issue of looking  
86 at the Dynegy contract's full term impact in Docket No. 00-0714. The Company's  
87 rebuttal and surrebuttal testimony that responded to my testimony about manner  
88 in which IP selected its swing contracts in Docket No. 00-0714 were filed after  
89 the Dynegy contract expired in March of 2001.

90 Q. What did Mr. Peters' testimony note about the second swing contract that was at  
91 question in Docket No. 00-0714?

92 A. Mr. Peters claimed that by performing the test put forth in my testimony from  
93 Docket No. 00-0714, IP would have selected the second swing contract;  
94 therefore it should not incur any prudence disallowance from that contract in the  
95 instant proceeding.

96 Q. Do you agree with Mr. Peters' statements about the second swing contract,  
97 which you found IP incurred \$2,000 of imprudent gas costs during the instant  
98 reconciliation period?

99 A. No. First, I would note that the test that Mr. Peters prescribes to me was in fact a  
100 statement of the load factors IP incurred for its swing contracts for the winter  
101 season of 1999-2000 and 2000-2001, which demonstrated that it was improper  
102 to assume no gas usage when determining the appropriate firm swing contract to  
103 select. Also, my rebuttal testimony in Docket No. 00-0714, pages 23-24 noted

104 that “[p]rior to accepting firm bids that include commodity price differences with  
105 other offered bids, IP, at a minimum, should investigate a break-even usage rate  
106 or load factor that those contracts would require in order for the commodity rate  
107 difference to enter into the equation.” Further, the Commission, in its Order in  
108 Docket No. 00-0714, page 34, noted, in part, the following:

109 While it may be difficult to estimate the amount of gas that will be  
110 taken under any particular swing contract, IP’s selection criterion  
111 wrongly assumes that no gas will be taken. When IP entered into  
112 the swing contracts for the 2000-2001 winter season, it knew that it  
113 purchased gas under each of its swing contracts for the 1999-2000  
114 winter season at the load factors listed in the preceding paragraph.  
115 The Commission does not find that Staff’s method for considering  
116 the commodity costs is the only or best way to do so. Rather,  
117 based upon the evidence, the Commission finds the Staff’s method  
118 is more reasonable than ignoring such costs.

119 I also note that IP, for the same reasons stated above with regard to the Dynegy  
120 contract, was not precluded from providing information about this particular  
121 contract for its full November 2000 – March 2001 term. Finally, based upon the  
122 information provided in 00-0714, the Commission found the Company’s decision  
123 to enter into this contract imprudent. Therefore, I continue to support my  
124 adjustment that IP incurred \$2,000 in imprudent gas costs as a result of this  
125 contract in the instant proceeding.

126 **Shanghai Reduced Peak Day Capacity**

127 Q. Did IP provide rebuttal testimony regarding your contention that IP was  
128 imprudent for reducing the peak day capacity of its Shanghai storage field?

129 A. Yes. IP provided the rebuttal testimonies of Kevin Shipp, IP Exhibit 3.3, and  
130 Timothy Hower, IP Exhibit 5.0.

131 Q. Please summarize the conclusions you reached regarding IP's reduction of the  
132 peak day capacity of its Shanghai storage field.

133 A. I noted on pages 22 through 24 of my direct testimony that IP should have  
134 identified and acted upon potential deliverability problems at the Shanghai  
135 storage field prior to encountering the need to reduce the peak day capacity of  
136 the field. I also summarized seven points in support of my opinion.

137 1. IP knew that wells at aquifer storage fields experience deliverability  
138 declines.

139 2. IP did not make use of hysteresis curves to monitor its storage field.

140 3. IP did not discover a metering error until a problem was found at another  
141 field.

142 4. IP did not capitalize upon observations from monitoring wells.

143 5. IP waited more than a year to replace gas misaccounted for due to the  
144 metering error.

145 6. IP's failure to replace gas misaccounted for due to the metering error may  
146 have contributed to a well at Shanghai developing a sanding problem.

147 7. IP last took action to maintain the Shanghai field's deliverability in 1994.

148 I also made four observations regarding IP's overall storage operations.

149 1. It is uncommon for a utility to reduce the peak day capacity of a storage  
150 field.

151 2. IP reduced manpower levels associated with oversight of its storage fields.

152 3. IP reduced its capital spending amounts.

153 4. IP's ability to identify the root cause of problems and therefore its ability to  
154 correct those problems is poor.

155 **Storage Field Deliverability Declines**

156 Q. What did you state in your direct testimony regarding storage field deliverability  
157 declines?

158 A. I noted that IP, in its response to Staff data request ENG 2.112, provided a study  
159 that noted downhole damage in wells could cause a deliverability decline of 3 to  
160 5% a year in wells. I also noted that since IP reperfored wells at Shanghai in  
161 the past, IP knew the potential existed for well deliverability at Shanghai to  
162 decline over time.

163 Q. What did IP's witnesses state regarding your above statements?

164 A. IP witnesses did not dispute my statement. In fact, in response to Staff data  
165 request ENG 2.203, Mr. Hower noted that the decline in storage field  
166 deliverability was known in the United States as well as overseas.

167 **Hysteresis Curves**

168 Q. What did you state in your direct testimony regarding hysteresis curves?

169 A. I noted that my understanding was that hysteresis graphs were an industry  
170 standard for monitoring the performance of storage fields and that reference  
171 material IP provided noted that parallel hysteresis loops on a hysteresis graph  
172 could be indicative of a decline in the productivity of withdrawal wells in aquifer

173 gas storage reservoirs. I also noted that IP had not plotted the hysteresis graphs  
174 for its storage fields in order to ascertain the productivity of its withdrawal wells or  
175 to possibly identify other problems in the field. Finally, I stated that I believed had  
176 IP made use of this important diagnostic tool, it could have identified problems at  
177 the Shanghai storage field much sooner and without incurring the need to reduce  
178 the peak day deliverability of its storage field.

179 Q. How did IP respond to your statements on hysteresis curves?

180 A. On page 10 of his rebuttal testimony, Mr. Shipp noted that hysteresis graphs are  
181 another tool to monitor and verify inventory. Mr. Shipp also commented that  
182 since the incorrect inventory levels were not recognized until 2000, the data IP  
183 would have used to make these plots would have been incorrect and only shown  
184 an incorrect plot. Mr. Hower, on pages 14 and 15 of his rebuttal testimony, noted  
185 that he would disagree with any implications that hysteresis plots are a technique  
186 for monitoring gas storage reservoirs that is preferred to other methods that he  
187 discussed in his testimony. Mr. Hower also noted that he believed a prudent  
188 storage operator should rely on numerous methods to monitor its inventory and  
189 not rely only on one method.

190 Q. Did you recommend that IP rely only on one method to monitor its storage field?

191 A. No. My testimony stated that IP should have also plotted hysteresis graphs to  
192 monitor its storage operations. In fact, when I met with IP on June 11, 2001, IP  
193 personnel said that they intended to start plotting hysteresis graphs again.

194 Q. Did IP disagree with your contention that hysteresis graphs are an industry  
195 standard?

196 A. Mr. Shipp's and Mr. Hower's rebuttal testimonies do not dispute my statement,  
197 however, in response to Staff data request ENG 2.210 Mr. Hower notes that  
198 hysteresis plots are widely used, but that their use is by no means universally  
199 accepted.

200 Q. Do you still believe that IP should plot the hysteresis curves for its storage fields?

201 A. Yes, especially, the Shanghai storage field.

202 Q. Why do you believe IP should plot the hysteresis curves for its Shanghai storage  
203 field?

204 A. Mr. Shipp, on page 4 of his rebuttal testimony, noted that weather and gas  
205 consumption, or the lack thereof, have a substantial impact on the Company's  
206 ability to diagnose, correct and verify any changes in the Shanghai field's  
207 deliverability because it services a captive load. If the Company is not  
208 experiencing a normal or severe winter season, the load at Shanghai will not be  
209 adequate enough to fully test any changes made to the field during the prior  
210 period. Given the limitations that Mr. Shipp attributes to IP's ability to monitor the  
211 Shanghai field, it makes sense that IP should use all reasonably available  
212 monitoring tools, such as hysteresis curves.

213 Q. Do you continue to believe that had IP made use of this important diagnostic tool,

214 it could have identified problems at the Shanghai storage field much sooner and  
215 without incurring the need to reduce the peak day deliverability of its storage  
216 field.

217 A. Yes.

218 **Undiscovered Metering Error**

219 Q. What did you state in your direct testimony regarding the metering error that  
220 caused the misaccounted for gas?

221 A. My testimony noted that based on a meeting I had with IP personnel on June 11,  
222 2002, my understanding was that IP did not find the metering error at Shanghai  
223 that caused 18.5% of the Shanghai field top gas to be misaccounted until it had  
224 found an error with the metering at Hillsboro and then IP decided to also check  
225 the metering at Shanghai to ensure no errors occurred there as well. During the  
226 course of this review, IP found the problem at Shanghai.

227 Q. What did IP's testimony note regarding the discovery of the metering error at  
228 Shanghai?

229 A. Mr. Shipp's rebuttal testimony, pages 11 through 13, noted that IP, in a winter  
230 operations review meeting after the season of 1998-1999, decided to initiate a  
231 review of all storage fields for accuracy and deliverability to address certain  
232 issues that had been noticed in the prior winter. Further, in response to Staff  
233 data request ENG 2.168, the Company noted that IP requested this review as

234 part of its efforts to identify causes of lost deliverability at Shanghai. Finally, IP  
235 noted during the June 11 meeting between myself and IP personnel, the IP  
236 employee simply expounded on the fact all metering was being checked and that  
237 a problem with the orifice metering at Hillsboro was identified prior to checking  
238 the metering at Shanghai and that I misunderstood why IP checked the metering  
239 at Shanghai after finding a problem at Hillsboro.

240 Q. Does IP's testimony resolve all of your concerns regarding the manner in which  
241 the metering error was discovered?

242 A. No. IP disputes my understanding of the information that I received at the June  
243 11 meeting with IP personnel. However, IP provides two different versions for  
244 why the information I provided in my direct testimony about the June 11 meeting  
245 is incorrect. First, IP, in response to data request ENG 2.168 states the review  
246 was done to identify causes of lost deliverability at Shanghai. Then Mr. Shipp, in  
247 his rebuttal testimony, states the review was done as a result of a winter  
248 operations review meeting after the season of 1998-1999.

249 Based upon my understanding about the above information, IP was concerned  
250 with Shanghai's deliverability, but checked the Hillsboro metering first. I would  
251 expect that if IP had concerns with the Shanghai storage field, it would check the  
252 metering at Shanghai first rather than Hillsboro. Given the information I have  
253 available at this time, it does not make sense for IP to check the Hillsboro  
254 storage field's metering first. In an attempt to resolve this concern, I have  
255 requested copies of notes taken during the winter operations review meeting

256 discussed above to clarify this topic, but this response will not arrive until after my  
257 rebuttal testimony is filed. Therefore, IP should also attempt to clarify this topic in  
258 its surrebuttal testimony.

259 **Monitoring Well Observations**

260 Q. What did you state in your direct testimony regarding the monitoring well  
261 observations?

262 A. I noted that based upon the information that I discussed with IP personnel at the  
263 June 11, 2002 meeting, IP had failed to capitalize upon or make use of the  
264 observation that gas was not being detected or observed in the monitoring wells  
265 at Shanghai. I also stated that, at a minimum, IP should have investigated  
266 potential problems at the storage field prior to its discovery of a metering error at  
267 the field. I also noted that the information provided to me by the Company in  
268 response to Staff data request ENG 2.170, which noted that there were no years  
269 in which natural gas was not detected within monitoring wells (also called  
270 observations wells), versus the discussion I had with IP personnel at the June 11  
271 meeting was not consistent.

272 Q. What did IP's testimony note regarding your statements?

273 A. Mr. Shipp, on page 13 of his rebuttal testimony, noted that the response IP  
274 provided within ENG 2.170 was accurate. However, he pointed out that the  
275 question I asked in ENG 2.170 would not reveal information about the topic that  
276 was discussed at the June 11 meeting, due to possibly a misunderstanding

277 regarding the phrase “go to gas.” Mr. Shipp further stated that whether you  
278 detect gas at the monitoring well or not, it is not indicative of having a  
279 deliverability problem. Aside from that comment, neither Mr. Shipp nor Mr.  
280 Hower addressed my comments regarding IP potentially making use of the fact  
281 that observation wells did not “go to gas”.

282 Q. What does the phrase “go to gas” mean?

283 A. Mr. Shipp, on pages 13 and 14 of his rebuttal testimony, noted that IP’s definition  
284 of “go to gas” is that there is a much higher gas saturation at the well head. At  
285 that time, IP valves the well off so that natural gas is not venting to the  
286 atmosphere.

287 Q. Do you continue to believe the failure of monitoring wells to “go to gas” should  
288 have prompted some action by IP?

289 A. Yes.

290 Q. Do you have any information regarding when IP was aware of the failure of  
291 observation wells at Shanghai to “go to gas”?

292 A. Yes. The Company’s response to Staff data request ENG 2.177, Attachment 1,  
293 is a copy of a confidential document dated April 10, 2001, entitled Shanghai Field  
294 2001 Review of Peak Day and Annual Performance (“2001 Shanghai Report”).  
295 On page 16 of this report, it notes the last time the edge observation wells have  
296 gone to pressure (which I take to mean “go to gas”) are F-6 in 1992, Lawless #1

297 in 1993, Carlson #1 in 1993 and Johnston #1 in 1996. There is also a note on  
298 this page that states as follows: "Note: more recent data similar to below will be  
299 included in the final report. It will indicate the edge observation wells have not  
300 had gas reach them in recent years".

301 Q. What does the final report note on this topic?

302 A. I was not provided with a final report. I have requested one, should one exist, as  
303 well as an explanation of why a final report would not exist, but that will not arrive  
304 until after I file my rebuttal testimony. Therefore, I request that IP address the  
305 existence of a final report and its contents in its surrebuttal testimony.

306 Q. Do you continue to believe that IP could have acted upon the knowledge that the  
307 monitoring wells at Shanghai were no longer going to gas?

308 A. Yes.

309 **Delay in Replacing Misaccounted for Gas**

310 Q. What did you state in your direct testimony regarding about the Company's delay  
311 in replacing the misaccounted for gas?

312 A. I noted that once IP identified the metering error, the Company delayed for more  
313 than one year the replacement of the majority of the gas misaccounted for due to  
314 the metering error. I also noted that the inexplicable delay in replacing the  
315 misaccounted for gas may have contributed to the subsequent deliverability  
316 problems with the Shanghai storage field.

317 Q. What did IP's witnesses state regarding your above statements?

318 A. Mr. Shipp, on page 9 of his rebuttal testimony, noted that during the late 1980's  
319 IP only had a total inventory in the field of 10 BCF, which was 11.3% less than  
320 the 2001 inventory of 11.3 BCF and did not experience deliverability problems.  
321 Mr. Shipp also noted, on page 14, that based on historical load patterns, IP did  
322 not see the purpose of injecting additional gas, which would not be able to be  
323 retrieved based on limited demand.

324 Mr. Hower noted on page 22 of his rebuttal testimony that he did not agree with  
325 my conclusion that the failure to replace the gas in a timely fashion may have  
326 contributed to the subsequent deliverability problems. Mr. Hower stated that the  
327 deliverability of a gas storage field is related to the gas inventory simply because  
328 it is a function of pressure. Therefore, with respect to deliverability, it does not  
329 matter if there was a delay in replacing any gas lost in the reservoir, any drop in  
330 reservoir pressure would be restored and along with it, the field deliverability.

331 Q. Do you agree with the Company witnesses' statements?

332 A. No. I generally agree with Mr. Hower that deliverability of a storage field is  
333 related to gas inventory because it is a function of pressure. However, the  
334 problems at Shanghai are more complex than that. In fact, I believe the 2001  
335 Shanghai Report contradicts the statements made by the Company witnesses.  
336 **This Company report noted several factors that contributed to the decline in**  
337 **deliverability at Shanghai. Two of these factors directly relate to the statement**

338 made by the Company witnesses within this proceeding. These two factors were  
339 that an increase in water production at edge wells due to low inventory levels  
340 reduced field deliverability and the reduction in the total gas volume at Shanghai  
341 between 1984 and 1987 may have adversely affected field performance.

342 Q. How does the 2001 Shanghai Report contradict the statements made by IP's  
343 witnesses on this subject?

344 A. First, Mr. Shipp noted above that the Shanghai storage field operated in the late  
345 1980s at inventory levels below current levels without impacting the deliverability  
346 at that time. However, IP's own report notes that the reduction in total gas  
347 volumes during that time period may have adversely impacted field performance  
348 at a later date.

349 Second, Mr. Hower noted he disagreed with my contention that the failure to  
350 replace the misaccounted for gas in a timely fashion impacted the field  
351 deliverability. In fact, he stated that it does not matter if there was a delay in  
352 replacing any gas lost in the reservoir, any drop in reservoir pressure would be  
353 restored and along with it, the field deliverability. However, IP's own report noted  
354 that the lack of gas inventory was causing water production in the edge wells  
355 that, in turn, was causing deliverability problems. Had IP replaced the  
356 misaccounted for gas immediately, IP may not have experienced water  
357 production problems at its edge wells.

358 **Well Developing a Sanding Problem**

359 Q. What did you state in your direct testimony regarding one of the Shanghai  
360 storage field's wells developing a sanding problem?

361 A. I noted that the Company's failure to replace the gas lost due to a metering error  
362 might have contributed to one of Shanghai's wells developing a sand production  
363 problem, since none of Shanghai's wells in the past had developed a sanding  
364 problem.

365 Q. What was IP's response to your statement?

366 A. Mr. Hower, on pages 22 and 23 of his rebuttal testimony, noted that he was not  
367 aware of any theoretical basis or field examples where a reduced gas inventory  
368 was identified as a cause of sand production in storage wells. He further stated  
369 that in his opinion a reduced gas inventory would actually tend to prevent sand  
370 production problems rather than cause them.

371 Q. How long has the Shanghai storage field operated?

372 A. Mr. Hower's rebuttal testimony, page 7, noted the Shanghai storage field has  
373 operated for approximately 33 years.

374 Q. Did Mr. Hower state what he thought may have caused a well at the Shanghai  
375 storage field to develop a sanding problem for the first time after 33 years of  
376 operation?

377 A. No.

378 Q. Did Mr. Hower dispute your statement that a well at the Shanghai storage field

379 developed a sanding problem after the field was operated with a reduced level of  
380 gas inventory?

381 A. No.

382 Q. Do you have any additional information regarding a linkage between the reduced  
383 inventory levels at the Shanghai storage field and one of its wells developing a  
384 sanding problem?

385 A. Yes. As discussed above, the 2001 Shanghai Report noted an increase in water  
386 production from edge wells. A means of maintaining deliverability with increased  
387 water production is to increase the drawdown pressure placed on the storage  
388 field. However, doing this could also increase the risk of damaging the well bore.

389 Q. What is drawdown pressure?

390 A. The drawdown pressure is the difference between the pressure in the storage  
391 reservoir and the surface.

392 Q. Why do you believe the drawdown pressure may be related to the sanding  
393 problem at Shanghai?

394 A. During my June 11, 2002 meeting with IP, I obtained a copy of a report dated,  
395 October 7, 1999 whose cover memo noted the topic was the Hillsboro Field  
396 Annual and Peak Day volume rating change. The introduction of this report, in  
397 part, noted the following: "To reduce the possibility of sand production into the  
398 injection – withdrawal well bores, it is also recommended the field's drawdown

399 pressures be limited at all times to a maximum of 100 psi and any resulting  
400 deliverability reductions be replaced by alternate gas supplies. However, it is  
401 anticipated the revised annual and daily deliverability ratings can be achieved  
402 without exceeding the drawdown limit.”

403 In response to Staff data request ENG 2.183, IP noted the Shanghai storage field  
404 drawdown limit is 150 psi. This response also noted that this limit is a guide for  
405 the gas controllers to monitor what the field is doing and that the gas storage  
406 engineer and technical staff can and do make the decision to exceed the limits if  
407 the field is being monitored by field personnel. Finally, Attachment 1 to the  
408 Company’s response to ENG 2.183 provided a listing for each hour of each day  
409 from 1999 through 2001 that the drawdown pressure of 150 psi was exceeded.  
410 This attachment noted approximately 1,200 occurrences when the drawdown  
411 pressure was exceeded.

412 Q. What does the above information tell you?

413 A. IP’s Hillsboro storage field, with a history of sanding production problems has a  
414 set drawdown pressure that cannot be violated. However, the Shanghai storage  
415 did not operate under such stringent constraints. Also, IP was operating the field  
416 at reduced inventory levels and was having water production problems at some  
417 wells. Based upon this information, I continue to believe that the sanding  
418 problem that occurred at the Shanghai field might be related to IP’s failure to  
419 replace the gas misaccounted for due to the meter error in a timely fashion.

420 **Past Actions to Maintain Shanghai Deliverability**

421 Q. What did you state in your direct testimony regarding IP's past actions to  
422 maintain Shanghai storage field's deliverability?

423 A. I noted that the last occasion that IP took action to maintain the Shanghai storage  
424 field's deliverability was a casing repair and two well perforations in 1994. This  
425 information came from the Company's response to Staff data request ENG  
426 2.112.

427 Q. What was IP's response to your statement?

428 A. IP did not directly reply to my statements on this topic. However, Mr. Shipp on  
429 pages 7 and 8 of his rebuttal testimony provided a listing by year for the period  
430 1993 through 2002 of the specific enhancements and studies that IP has  
431 performed on Shanghai.

432 Q. Did Mr. Shipp's testimony indicate if any of the projects he listed were  
433 undertaken to enhance or maintain the deliverability of the Shanghai storage  
434 field?

435 A. No. However, Mr. Shipp, on page 6 of his rebuttal testimony, did indicate that IP  
436 had "initiated numerous projects to circumvent potential problems while trying to  
437 ensure the maximum deliverability rating". Therefore, to avoid any confusion  
438 between the information the Company provided in response to Staff data request  
439 2.112 and Mr. Shipp's rebuttal testimony, I request IP clarify what specific actions

440 it has undertaken since 1993 to maintain the Shanghai storage field's  
441 deliverability.

442 Q. What was the significance of the 1994 date that IP provided to you as the last  
443 date it had taken action to maintain the deliverability of Shanghai?

444 A. Since IP had not performed any work on a well bore at the Shanghai storage field  
445 since 1994 and given the potential 3-5% degradation per year in well  
446 performance, I could have expected the potential for a deliverability decline at  
447 wells with downhole damage in the range of 21 to 35 percent.

448 **Conclusion**

449 Q. Did IP's rebuttal testimony cause you to change your opinion regarding any of  
450 the seven reasons you listed in your direct testimony as reason why the  
451 Company's decision to reduce the peak day capacity of its Shanghai storage field  
452 was imprudent?

453 A. No. In fact, based upon the information that I received from the Company as a  
454 result of its rebuttal testimony, I am only more convinced that IP should have  
455 identified and acted upon the potential deliverability problems prior to  
456 encountering the need to reduce the peak day capacity of the field. Further, I  
457 believe the 2001 Shanghai Report in some instances contradicts the conclusions  
458 reach by IP's own witnesses in this proceeding.

459

459 **Overall Storage Concerns**

460 **Uncommon to Reduce Peak Day Capacity**

461 Q. What did you state in your direct testimony regarding the reduction of peak day  
462 capacity in a storage field?

463 A. My direct testimony noted that it was uncommon for a utility to reduce the peak  
464 day capacity of its storage fields, yet IP had reduced the peak day capacity of  
465 both of its largest storage fields.

466 Q. What did IP say in response to your above statement?

467 A. Mr. Hower, on pages 9 and 10 of his rebuttal testimony, noted that he did not find  
468 it unusual that IP had reduced the peak day capacity of the Shanghai storage  
469 field. He also said that in his experience storage field operators are constantly  
470 working to minimize the natural degradation that incurs in aquifer reservoirs over  
471 time.

472 Q. Was Mr. Hower aware of any other entities that had reduced the peak day  
473 capacity of their storage fields?

474 A. Apparently not. Staff data request ENG 2.205 asked Mr. Hower if he knew of  
475 any other storage field operator that had reduced the peak day capacity of its  
476 storage fields and specifics about each instance. Mr. Hower's response  
477 referenced his response to ENG 2.203. The response to ENG 2.203 contained a  
478 series of articles about various aspects of natural gas storage. However, I did

479 not note any articles that dealt with any storage field operator reducing the peak  
480 day capacity of its storage field.

481 **Reduction in Manpower Levels**

482 Q. What did you state in your direct testimony regarding a reduction in manpower  
483 levels associated with IP storage fields?

484 A. My direct testimony noted that IP had reduced the manpower levels associated  
485 with the oversight of its storage fields.

486 Q. What was IP's response to your statement?

487 A. IP did not disagree that there were fewer storage field supervisors, but Mr. Shipp,  
488 on page 17 of his rebuttal testimony, noted that in 1995, IP adopted a manpower  
489 plan that instituted a self-directed work team philosophy. This plan included a  
490 reduction in supervisory positions, but at the same time upgraded one of the  
491 operation's positions to foreman. Mr. Shipp, on pages 17 and 18 of his  
492 testimony, then noted the various courses or conferences the storage operators  
493 attended to increase their level of expertise.

494 Mr. Shipp also noted, on pages 18 and 19 of his rebuttal testimony, that the  
495 concept of the self-directed work teams is a group of individuals that have the  
496 same duties and responsibilities as everyone else within the group. This group is  
497 responsible and accountable for the functions that are performed at the field. Mr.

498 Shipp then referred to the concept with the adage that two heads are better than  
499 one.

500 Q. Did your review in this proceeding involve a comparison of IP's actions pre-self-  
501 directed work team versus post-self-directed work team at its storage fields?

502 A. No. My review simply noted that IP had reduced the number of supervisors at  
503 the storage field from a maximum of four individuals in 1991 to the one individual  
504 at the beginning of 2000. However, I would note that much of the activities that  
505 lead up to IP's decision to reduce the peak day deliverability at Shanghai  
506 occurred while under the self-directed work teams.

507 **Reduction in Capital Spending**

508 Q. What did your direct testimony note regarding the Company's level of capital  
509 spending associated with its storage operations?

510 A. I noted in my direct testimony that based upon the five years of data provided,  
511 the Company had reduced the level of capital expenditures below historical levels  
512 while keeping operations and maintenance expense fairly constant for a  
513 considerable amount of time. I also noted that this might indicate that the  
514 Company is being reactive rather than proactive when determining when to make  
515 upgrades or other improvements at its storage fields.

516 Q. How did IP respond to your comments?

517 A. Mr. Shipp, on pages 23 through 25 of his rebuttal testimony, discusses IP's  
518 commitment to storage. Mr. Shipp noted that IP continues to invest capital  
519 dollars, as deemed necessary, to support its gas storage fields. Mr. Shipp also  
520 noted that my analysis used the two highest budget years to compare to the two  
521 years with the lowest costs. Mr. Shipp stated that the two years with the highest  
522 costs were much larger due to specific large budgeted projects that needed to be  
523 performed.

524 Mr. Shipp also provided a list of various operations and maintenance and capital  
525 projects that IP has funded since 1993. The confidential version of Revised IP  
526 Exhibit 3.4, also notes the amount spent on those specific capital projects for  
527 each year.

528 Mr. Hower, on page 21 of his rebuttal testimony, noted that IP had re-perforated  
529 all eight injection/withdrawal wells at Shanghai in the 1990's, performed a study  
530 that compared neutron logs in 1998, and most recently retained Halliburton  
531 Energy Services ("Halliburton") in 2001 to perform numerous deliverability tests  
532 and well enhancement treatments as examples that IP has been proactive in  
533 past years in attempting to maintain the deliverability of its aquifer storage fields.

534 Q. Where you able to use the information from IP's Revised Exhibit 3.4 to provide a  
535 longer term evaluation of IP's capital budget?

536 A. No. I did add all of the capital project cost together for each year to see if a  
537 longer term analysis could be conducted, but I noticed that I was not getting a

538 good correlation between the projects listed and the information I was previously  
539 provided by IP. For example, I encountered a difference in excess of \$1,000,000  
540 for the individual projects listed by IP in 2001 on Revised IP Exhibit 3.4 versus  
541 the values shown in ICC Staff Exhibit 2.00, Schedule 2.04. Therefore, I could not  
542 make any meaningful use of the information provided by IP Revised IP Exhibit  
543 3.4.

544 Q. Do you agree with the comments made by Mr. Hower regarding how proactive IP  
545 was with regard to the Shanghai storage field?

546 A. No. I have not reviewed information prior to or during the time frame when IP  
547 decided to re-perforate Shanghai's wells in the early 1990's, so I cannot state  
548 whether that was or was not proactive. However, the 1998 report that I have  
549 regarding Shanghai was a report on the historical gas leakage from that field and  
550 dealt with the topic of whether or not IP was convinced that gas was no longer  
551 leaking from the field. I do not see how performing this study is considered  
552 proactive; instead it was a necessary study to ensure IP had corrected a leak at  
553 Shanghai.

554 Finally, IP's hiring of Halliburton came after it had reached the conclusion that it  
555 needed to reduce the peak day capacity of the Shanghai storage field. My direct  
556 and rebuttal testimony outline why IP was not proactive in identifying problems  
557 with Shanghai. The hiring of Halliburton after ignoring other problems that I have  
558 detailed cannot be considered proactive.

559 **Root Cause Analyses**

560 Q. What did your direct testimony conclude regarding the Company's ability to  
561 perform root cause analyses?

562 A. My direct testimony noted that events surrounding the reduction in the peak day  
563 capacity of the Shanghai storage field and the Hillsboro Incident discussed on  
564 pages 31 through 38 of my direct testimony indicate poor oversight by the  
565 Company in its ability to identify and act upon problems facing its storage  
566 operations. This also calls into question IP's ability to operate its storage  
567 operations in a safe, reliable, and efficient manner.

568 Q. How did IP respond to the above statements?

569 A. Mr. Shipp, on pages 20 through 22 and pages 25 through 27 of his rebuttal  
570 testimony, noted the various reasons why he believes IP operate its storage  
571 fields in a safe, reliable, and efficient manner. Mr. Shipp also copied the  
572 definitions I provided in response to Company data request 59 for the terms  
573 "safe", "reliable", and "efficient" on an individual basis.

574 Specifically, Mr. Shipp's rebuttal testimony discusses how the Company relies  
575 upon its storage fields for peak day supplies; how improved automation and  
576 remote control of control systems has improved efficiencies; that IP has only  
577 received one non-compliance at its storage fields in the last 10 years; how it  
578 safely shut down the Hillsboro storage field after the events involved in the  
579 Hillsboro Incident discussed in my direct testimony; and how IP was able to

580 restore the Hillsboro storage field to 65% deliverability within five days of incident  
581 and to 100% deliverability within five weeks of the incident.

582 Q. Do you disagree with any of the information that Mr. Shipp provided regarding  
583 the above statements?

584 A. No.

585 Q. Do you agree with the manner that Mr. Shipp assumed you used the phrase  
586 “safe, efficient, and reliable” in your direct testimony?

587 A. No. Mr. Shipp uses each term individually, however, my testimony uses those  
588 terms as a complete phrase.

589 Q. Why did you use the phrase “safe, efficient, and reliable” in your direct  
590 testimony?

591 A. I used this phrase because that was the terminology that IP used in its response  
592 to Staff data request ENG 2.149. This response noted in relevant part that: the  
593 Company in 1995 and continuing through early 2000 implemented a review of its  
594 storage field operations to assure the continuance of safe, reliable and efficient  
595 operations. As a result of this review IP determined that its storage field  
596 operations could be conducted in a safe, reliable and efficient manner with one  
597 supervisor and by modifying the responsibilities of the operators and changing  
598 work practices.

599 Q. Do you still believe that your review indicated that the Company’s ability to

600 identify and therefore act upon problems facing its storage operations is poor and  
601 that this also calls into question IP's ability to operate its storage operations in a  
602 safe, reliable, and efficient manner?

603 A. Yes.

604 **Conclusion**

605 Q. Did IP's rebuttal testimonies cause you to change your opinion regarding any of  
606 the four reasons you listed in your direct testimony as overall concerns you had  
607 regarding IP's storage operations?

608 A. No.

609 **New Items Brought Up by IP**

610 Q. In addition to responding to the specific points of your direct testimony, did IP's  
611 witnesses bring up related topics that are not addressed above?

612 A. Yes. Mr. Shipp discussed the difficulty that IP faces with monitoring the  
613 Shanghai storage field and a past leak at Shanghai. Mr. Hower discussed the  
614 expected life of a storage field.

615 **Shanghai Serves Captive Load**

616 Q. What did Mr. Shipp say regarding IP's ability to monitor its Shanghai storage  
617 field?

618 A. Mr. Shipp, on page 4 of his rebuttal testimony, noted that weather and customer

619 consumption will have substantial impact on the Company's ability to diagnose,  
620 correct and verify any changes to a storage aquifer's characteristics. Particularly,  
621 in the case of Shanghai, if the Company and its customers are not experiencing  
622 a normal to severe winter season, the load that Shanghai serves will not be  
623 adequate to fully test the field. This happens because the field only serves the  
624 immediate area around the field and load cannot be created to test the field.

625 Q. Do you agree with Mr. Shipp's statement?

626 A. Yes and no. I agree that the Shanghai storage field is load constrained to just  
627 meet local demand. However, I do not agree that this necessarily limits IP ability  
628 to test individual well deliverability at the field. The Shanghai storage field  
629 contains eight injection/withdrawal wells. IP has the option to close the valve on  
630 each well, in essence turning them off, to test the operation of the other wells. In  
631 fact, IP's response to Staff data request ENG 2.160 noted that Halliburton  
632 conducted a study of well performance at Shanghai in late summer of 2001.  
633 Since Halliburton was able to conduct individual well tests, I fail to see why IP  
634 could not have done something similar. Therefore, IP could have performed  
635 individual well deliverability tests prior to encountering the need to reduce the  
636 peak day capacity of the Shanghai storage field.

637 **Prior Leak at Shanghai**

638 Q. What did Mr. Shipp indicate regarding a leak at Shanghai?

639 A. Mr. Shipp, on page 12 of his rebuttal testimony and in response to Staff data

640 request ENG 2.185, indicated that IP detected a casing leak at Moberg #1 in the  
641 1990-1992 time frame. Work was done in 1992 to stop the leak and in 1994 the  
642 well casing that caused the leak was replaced. The amount of the suspected  
643 leakage was 661,000 Mcf.

644 During the period 1995 through 1999, IP injected additional gas to make up for  
645 the gas lost due to the casing leak. Mr. Shipp noted that the size of the injection  
646 due to the casing leak was similar to the size of the gas misaccounted for due to  
647 the meter error, which made it difficult to identify the gas lost due to the metering  
648 error. Finally, in response to Staff data request ENG 2.185, IP noted that gas  
649 was injected over the five-year period to avoid pushing gas off structure.

650 Q. Why did IP spread the injections to replace the gas lost due to the casing leak  
651 over a five-year period?

652 A. According to the Company's response to Staff data request ENG 2.185, the gas  
653 was injected over that time frame to avoid pushing gas off structure and not  
654 being able to recover it.

655 Q. What information did you review regarding this leak?

656 A. I reviewed the 2001 Shanghai Report as well as the June 18, 1998 study on the  
657 Shanghai leak that was provided in the Company's response to Staff data  
658 request ENG 2.177, Attachment 2. These reports confirm the information  
659 provided above by Mr. Shipp.

660 Q. Do these reports provide any further information?

661 A. Yes. The 2001 Shanghai Report noted the failure of a monitoring well to go to  
662 gas in 1996 as well as the other wells noted previously. Therefore, IP was aware  
663 it appeared it was injecting more gas than it was withdrawing starting in 1995, but  
664 was still not observing gas in some monitoring wells where it had observed gas in  
665 the past and then had another monitoring well in 1996 stop going to gas. The  
666 Company also was slowly replacing gas lost due to the casing leak in order to  
667 avoid pushing gas off structure. This suggests that IP expected the gas  
668 contained within the reservoir to expand rather than contract. Therefore, the lack  
669 of response from Shanghai's monitoring wells after beginning the replacement of  
670 gas from the casing leak should have provided IP with plenty of warning that  
671 further problems existed at its Shanghai storage field.

672 **Storage Field Life**

673 Q. What did Mr. Hower note about the life of a storage field?

674 A. Mr. Hower noted on page 7 of his rebuttal testimony that a gas storage field has  
675 an expected life of 30 to 50 years. In response to Staff data request ENG 2.204,  
676 he noted that "expected life" was meant to refer to the period of time where the  
677 operation of a gas storage field remains economically attractive to the operator.

678 Q. Do you agree with the estimate of 30 to 50 years on the life of a storage field?

679 A. No. My understanding is that the first storage fields were developed in Illinois in

680 the mid to late 1950s and that most storage fields currently operating in Illinois  
681 were placed into operation in the time frame of late 1950s through early 1970s.  
682 Using Mr. Hower's statement many of the storage fields located in Illinois should  
683 face retirement in the near future. However, aside from IP retiring its smallest  
684 storage field last year, I am not aware of a utility retiring a storage field.

685 **Conclusion**

686 Q. Did the Company's rebuttal testimony persuade you that your proposed  
687 adjustment regarding the Company's decision to reduce the peak day capacity of  
688 its Shanghai storage field was improper?

689 A. No.

690 Q. Does this conclude your rebuttal testimony?

691 A. Yes.