

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PacifiCorp,)	
Complainant,)	
)	
v.)	
)	
Reliant Energy Services, Inc.	)	Docket No. EL02-80-000
Morgan Stanley Capital Group Inc.	)	EL02-81-000
Williams Energy Marketing & Trading Co.	)	EL02-82-000
El Paso Merchant Energy, L.P.,	)	EL02-83-000
)	
Respondents.	)	(consolidated)

PREPARED REBUTTAL TESTIMONY OF
DR. SHMUEL S. OREN
ON BEHALF OF PACIFICORP

1 **REBUTTAL TESTIMONY OF DR. SHMUEL S. OREN**

2 **Q. PLEASE STATE YOUR NAME.**

3 A. Dr. Shmuel S. Oren.

4

5 **Q. ON WHOSE BEHALF ARE YOU APPEARING?**

6 A. I am appearing on behalf of PacifiCorp.

7

8 **Q. ARE YOU THE SAME DR. OREN WHO SUBMITTED DIRECT**
9 **TESTIMONY IN THIS PROCEEDING EARLIER?**

10 A. Yes. My Prepared Direct Testimony was submitted on October 8, 2002 as
11 Exhibit No. PAC-11.

12

13 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

14 A. I am responding to the testimony filed by Respondents in this proceeding,
15 in particular the testimony sponsored by Drs. Harvey and Kalt. In addition,
16 I am responding to testimony presented by the Staff witness for the
17 Federal Energy Regulatory Commission ("FERC").

18

19 **Q. HAVE YOU OBSERVED ANYTHING IN YOUR REVIEW OF THE**
20 **RESPONDENTS' TESTIMONY THAT CHANGES THE CONCLUSIONS**
21 **THAT YOU PRESENTED IN YOUR DIRECT TESTIMONY?**

22 A. No. Nothing that the Respondents have presented refutes the evidence
23 that PacifiCorp presented in its Direct Testimony establishing that the

1 dysfunction in the spot markets affected pricing in the forward markets.

2 Furthermore, the Respondents' testimony presents no argument that
3 addresses the basic fact that in a dysfunctional market generators and
4 marketers with market power have the opportunity and the motive to
5 extend their market power to the forward market, exploiting the risk
6 aversion of buyers with an obligation to serve inelastic demand. The
7 Respondents' testimony consists mostly of a laundry list of all the possible
8 market fundamentals that could have affected the forward market without
9 any explanation of how these fundamentals impact forward prices,
10 especially when market dysfunction makes price forecasts risky at best.

11
12 Another major portion of the Respondents' testimony consists of dogmatic
13 argumentation regarding the sanctity of contracts, improper analogies with
14 insurance markets, and discussion on the beneficial effects of forward
15 contracting on competitive entry. Little attention is paid to the fact that for
16 all practical purposes entry of new market participants is irrelevant to the
17 near term contracts that are the subject of this proceeding and that fully
18 hedged trading can do little to mitigate high forward prices when
19 generation is noncompetitive.

20
21 It is also remarkable that the Respondents' testimony contains no
22 analyses to substantiate the witnesses' arguments refuting the connection
23 between the dysfunction spot market and the forward market other than

1 the flawed analysis presented by Professor Kalt from which he reaches
2 the erroneous conclusion that current spot and forward prices move
3 independently.

4
5 **Q. WHAT KEY POINTS HAVE THE RESPONDENTS' ECONOMIC**
6 **WITNESSES FAILED TO ADDRESS IN THEIR TESTIMONY?**

7 A. The Respondents' witnesses have overlooked basic realities of short-term
8 forward markets that allow high forward prices in excess of expected
9 future spot prices. These basic realities include: (1) the limited ability of
10 new entry to mitigate such prices; and (2) a lack of speculative arbitrage
11 between forward and future spot prices. The Respondents' witnesses
12 have ignored the strong linkage between the forward market and the spot
13 market when both rely on the same generation capacity pool. Also, the
14 witnesses have failed to address the mitigating impact of FERC's June 19
15 Order on spot price volatility and the effect of price volatility on forward
16 prices. See 95 FERC ¶ 61,418 (2001) ("June 19 Order").

17
18 The Respondents' economic witnesses and FERC's Staff witness argue
19 that scarcity rents could have justified prices in excess of marginal cost of
20 production. They seem to overlook the fact that scarcity rents cannot exist
21 when the market clearing prices are set by generators and marketers.
22 Scarcity rents can only exist when prices are either set by curtailed
23 demand or are raised above generators' offers in a load pocket by

1 congestion rents. Neither of these conditions can explain prices that were
2 set by generators' and marketers' offers or by price caps at levels that
3 exceeded the marginal cost of the most expensive MW produced. Even
4 when load was curtailed in California through rotating outages, the market
5 clearing prices were not set by curtailed load or by demand-side offers.

6
7 **Q. DO YOU FIND IT SIGNIFICANT FROM AN ECONOMIC PERSPECTIVE**
8 **THAT THE RESPONDENTS HAVE FAILED TO PRESENT A**
9 **STATISTICAL ANALYSIS SHOWING THAT THERE WAS NOT A**
10 **CONNECTION BETWEEN THE DYSFUNCTIONAL SPOT MARKET**
11 **AND THE MARKET FOR SHORT-TERM PRICES AT THE PALO**
12 **VERDE HUB?**

13 A. I find it curious that Dr. Harvey has not included in his testimony the
14 regression analysis contained in his earlier testimony in the Nevada Power
15 case, FERC Docket No. EL02-26-000. I interpret this omission to mean
16 that he recognized the shortcomings of that analysis. Evidently, from the
17 long list of fundamentals that he still provides as potential factors affecting
18 spot and future prices of electricity, only the price of natural gas turned out
19 to be statistically significant.

20
21 Also, Professor Kalt's limited analysis of the relationship between spot and
22 forward prices is flawed and misleading, as I will describe below.

23

1 **Q. THE RESPONDENTS HAVE SUGGESTED THAT PRICES THAT**
2 **EXCEED THE MARGINAL COST OF PRODUCTION CAN BE**
3 **APPROPRIATE IN ORDER TO CAPTURE SCARCITY RENTS. WHAT**
4 **IS THE PROPER MEASURE OF A SCARCITY RENT AND CAN**
5 **SCARCITY RENTS BE CALCULATED WITH ACCURACY WHEN THE**
6 **MARKET IS DYSFUNCTIONAL?**

7 **A.** Prices can exceed the marginal cost of production for inframarginal (more-
8 efficient or locationally advantaged) units, however, in a well-functioning
9 market, prices should not exceed the marginal cost of production
10 corresponding to the most expensive dispatched unit unless the price is
11 set by curtailed load or raised above generators' and marketers' offers in a
12 load pocket by congestion rents. In situations where load has the
13 capability to bid for curtailment the scarcity rent equals the difference
14 between the highest accepted demand side bid and the marginal cost of
15 the most expensive dispatched MW. When congestion is present and
16 demand is inelastic, the locational price in a load pocket may exceed the
17 marginal cost of the most expensive MW produced due to the resdispatch
18 cost associated with supplying an incremental MW in the load pocket.
19 When a market is dysfunctional due to inelastic demand, physical
20 withholding of generation, and due to economic withholding through
21 supply offers in excess of marginal cost, it is impossible to differentiate
22 between scarcity rents and abuse of market power. To the extent that
23 prices are set by generators' and marketers' offers, unused generation

1 capacity is present and there is no congestion, prices that exceed the
2 marginal cost corresponding to the most expensive dispatched MW reflect
3 market power.

4
5 **Q. ACCORDING TO VARIOUS WITNESSES FOR THE RESPONDENTS, A**
6 **CHANGE IN MARKET FUNDAMENTALS LOWERED PRICES IN THE**
7 **SPOT AND FORWARD MARKETS. ARE YOU AWARE OF ANY**
8 **SIGNIFICANT CHANGES IN THOSE FUNDAMENTALS FOLLOWING**
9 **THE ISSUANCE OF THE JUNE 19 ORDER?**

10 A. No. I am not aware of any changes in fundamentals (other than the June
11 19 Order) that could have resulted in the observed drastic changes in
12 forward prices immediately after the issuance of the June 19 Order.

13
14 **Q. HAS THE VOLATILITY THAT WAS SEEN IN THE MARKET PRIOR TO**
15 **JUNE 19, 2001 RESURFACED SINCE?**

16 A. No. The June 19 Order instituted the west-wide cap that significantly
17 dampened current and expected future spot price volatility.

18
19 **Q. DID PACIFICORP ENTER THE SUMMER 2002 CONTRACTS TO**
20 **MITIGATE THIS TYPE OF VOLATILITY?**

21
22 A. Yes. The purpose of the PacificCorp contracts was to insure its
23 ratepayers against the price volatility manifested during the period of

1 market dysfunction. The high “premium rates” reflected in the forward
2 prices paid by PacificCorp to secure such insurance were a function of the
3 high price uncertainty due to market dysfunction. The June 19 Order has
4 significantly reduced present and future spot price uncertainty and
5 consequently has eliminated the justification for the high insurance
6 premiums charged to PacificCorp. This is not a case of ex-post regret for
7 purchasing “unused” insurance as suggested by Professor Kalt. This is a
8 case of excessive insurance rates that were originally justified by risk that
9 has been mitigated through regulatory action and therefore the high
10 insurance rates are no longer warranted. The impact of the June 19 Order
11 on the insurance value provided by the 90-day Summer 2002 Contracts
12 can be theoretically quantified in terms of the value of a call option that
13 was stripped from the 90-day contracts.

14
15 **Q. PLEASE EXPLAIN.**

16 **A.** Prior to the issuance of the June 19 Order PacificCorp could have sold a
17 call option with a strike price of \$91.87 per MW against a commitment
18 from its customers to curtail load when the spot price exceeds that value.
19 The receipts from such sale could be used to provide a rate discount to
20 customers that subscribed to such a load response program. After the
21 June 19 Order, the value of such a call option on the energy to be
22 delivered pursuant to the 90-day Summer 2002 Contracts was nullified.
23 Hence the value of the aforementioned call option quantifies the proper

1 adjustment in the forward prices paid by PacificCorp due to the reduced
2 spot price risk resulting from the June 19 Order.

3
4 **Rebuttal to Direct Testimony by Dr. Harvey.**

5
6 **Q. ON PAGE 8, LINES 1-3, OF DR. HARVEY'S DIRECT TESTIMONY**
7 **FILED ON OCTOBER 8, 2002 AS EXHIBIT NO. MSC-1, DR. HARVEY**
8 **NOTES THAT "FORWARD OR LONG-TERM BILATERAL MARKET**
9 **PRICES ARE DETERMINED BY *EXPECTED FUTURE* MARKET**
10 **FUNDAMENTALS WHILE CURRENT SPOT MARKET PRICES ARE**
11 **DETERMINED BY *CURRENT* MARKET FUNDAMENTALS." HIS**
12 **SUBSEQUENT TESTIMONY DISCUSSES THE CHANGES IN MARKET**
13 **CONDITIONS THAT COULD HAVE AFFECTED THE FORWARD**
14 **PRICES. HAS DR. HARVEY ALSO ADDRESSED *THE EXPECTATION***
15 ***OF FUTURE SPOT PRICES*?**

16 **A.** No. Dr. Harvey fails to address this most basic and important of points in
17 this case. None of his testimony describes the mechanism through which
18 the projection of uncertain future fundamentals is incorporated into the
19 forward curve or is used to form expectations of future spot prices.
20 According to Dr. Harvey, how the market fundamentals come together to
21 produce expectations of future spot prices remains a mystery. The
22 literature dealing with the analysis of market power¹ describes

¹See, e.g., Paul Joskow and Edward Kahn "A Quantitative Analysis of Pricing Behavior in California's Wholesale Electricity Market During Summer 2000", The Energy Journal, Vol 23, No.

1 benchmarking models that allow estimation of competitive spot prices from
2 retrospective data describing the fundamentals. In a competitive
3 functional market such models could be used to forecast competitive
4 future prices given expectations of future fundamentals.

5
6 However, as demonstrated in these articles, in the dysfunctional California
7 market, the competitive price levels determined by the benchmarking
8 models grossly underestimate the realized spot prices. Dr. Harvey and
9 Professor Hogan have criticized such models² and have argued that even
10 if the market was well behaved and with perfect hindsight of the
11 fundamentals it is not possible to credibly estimate the level of competitive
12 spot prices using market simulations. If that is the case, then how do
13 traders in a dysfunctional market form expectations of future spot prices
14 based on uncertain future fundamentals? Dr. Harvey wants us to believe
15 that it is all a big mystery and insists that traders of forward contracts
16 subscribe to this mysterious process without paying any attention to the
17 current spot prices. In other words, these traders (according to Dr.
18 Harvey) ignore the daily real facts of current spot prices while focusing on
19 hazy and ambiguous forecasts of future fundamentals to estimate future
20 spot prices.

21
4 (2002) pp. 1-36, and Severin Borenstein, James Bushnell, and Frank Wolak, "Measuring Market Inefficiencies in California's Restructured Wholesale Electric Market," Center for the Study of Energy Markets, Paper No. CSEM WP 102, June 2002, available at www.stanford.edu/~wolak.

1 Q. ON PAGE 76 LINE, 14 OF HIS DIRECT TESTIMONY, DR. HARVEY
2 STATES THAT “[F]ORWARD CONTRACTS BY DWR FOR ENERGY
3 WITH EXISTING SUPPLIERS MIGHT, THEREFORE, HAVE FIRMED
4 SOMEWHAT FORWARD PRICES RELATIVELY TO EXPECTED
5 FUTURE SPOT PRICES DURING THIS PERIOD.” COULD THE
6 FORWARD CONTRACTS FOR THE CALIFORNIA DEPARTMENT OF
7 WATER RESOURCES (“DWR”) HAVE FIRMED THE FORWARD
8 PRICES RELATIVE TO EXPECTED FUTURE SPOT PRICES DURING
9 THE SPRING OF 2001?

10 A. Such firming of prices can only occur if supply of forward contracts is
11 restricted through the exercise of market power in the forward market.
12 There is no other reason for price-taking sellers to hold back supply of
13 forward contracts when offered the expected spot price levels. In fact,
14 economic rationale suggests that unless market power is being exercised
15 in the forward market, large procurements of forward contracts by the
16 DWR should reduce expected spot prices and consequently forward
17 prices. Such down sloping behavior in the supply function for forward
18 contracts is due to a free rider effect. This effect occurs because forward
19 contracting reduces the incentives for suppliers to exercise market power
20 in the spot market and brings spot prices closer to competitive.³

² S. Harvey and W. Hogan “Market Power and Market Simulation”, July 16, 2002.

³ The mitigating effect of forward contracting on spot prices is generally accepted in the economic literature on theoretical and empirical grounds. See e.g., Scott M. Harvey and William W. Hogan, “California Electricity Prices and Forward Market Hedging”, (October 17, 2000) (available at www.whogan.com), and Frank A. Wolak, “An Empirical Analysis of the Impact of Hedge Contracts on Bidding Behavior in a Competitive Electricity Market”, *International Economic Journal*, 14(2), pp.1-40 (available at <http://www.stanford.edu/~wolak>). This is also acknowledged

1 Consequently, in a functional market, if a large portion of the supply is
2 contracted forward, buyers will be less inclined to enter into forward
3 contracts. Additionally, we can expect the DWR forward contracts to have
4 been predominately for California delivery while the Summer 2000
5 Contracts were for delivery at Palo Verde in Nevada.

6
7 **Q. IS DR. HARVEY'S STATEMENT IN HIS DIRECT TESTIMONY**
8 **CONSISTENT WITH OTHER POINTS IN HIS TESTIMONY?**

9 A. The above-cited assertion that DWR purchases of forward contracts
10 "firm up" forward prices also seems to contradict Dr. Harvey's
11 subsequent statement on page 100, line 5, stating that "[i]t is particularly
12 important to recognize the potential role of DWR purchasing practices
13 themselves in bringing about the decline [of spot and forward prices during
14 mid and late 2001], as it is a straightforward matter for such a large buyer
15 to depress current spot prices below the competitive level by buying
16 energy from high-cost units under bilateral must-run contracts, causing the
17 spot market to clear based on the offers of lower cost units." Therefore, if
18 one follows this logic, such practices should reduce expected future spot
19 prices and subsequently forward prices, thus contradicting Dr. Harvey's
20 earlier assertion that DWR's purchases contributed to the high forward
21 prices in early 2001.

by Dr. Harvey in his Direct Testimony page 119, line 10, stating that "[f]orward fixed-price contracts are particularly valuable and pro-competitive in a market in preventing the potential exercise of market power".

1

2 **Q. WOULD YOU AGREE WITH THE ASSERTION ON PAGE 93, LINES 13-**
3 **16, OF DR. HARVEY'S DIRECT TESTIMONY THAT: "[E]VEN IF THERE**
4 **WERE ANY EXERCISE OF MARKET POWER DUE TO A SHORTAGE**
5 **OF COMPETITORS IN THE SPOT MARKETS, THERE WOULD BE NO**
6 **REASON FOR A SIMILAR SHORTAGE OF COMPETITORS IN THE**
7 **MARKET FOR FORWARD PRICE HEDGES"?**

8 A. No. This statement is misleading since PacifiCorp did not buy forward
9 price hedges but rather purchased contracts for delivery of power from
10 resellers of power who take title to the power that they resell. To the
11 extent the price of that power is inflated through the exercise of market
12 power by the generator at the beginning of the supply chain, the reseller is
13 peddling an overpriced commodity and functions like a scalper of scarce
14 tickets. Competition in the forward resale market when generation is not
15 competitive can only mitigate dysfunctional forward prices (assuming they
16 will not take a sure loss) if the resellers enter into open short forward
17 positions (i.e., arbitrage the forward market against the spot) which they
18 cover either through spot purchases or by building new plants. However,
19 the construction of new plants was not an option for the contracts obtained
20 by PacifiCorp because of the short time to delivery and the short contract
21 duration. As to open short positions, I do not believe that any of the
22 traders with whom PacifiCorp has contracted has sold uncovered
23 contracts to PacifiCorp. Furthermore, to my knowledge (especially since

1 the electricity debacle in the summer of 1998) large open short forward
2 positions relying on covering the position in the spot market are
3 uncommon due to the high exposure of such positions, and that makes
4 the competitiveness of the hedging market irrelevant with regard to
5 mitigation of an overpriced short-term forward market.

6
7 **Q. ACCORDING TO DR. HARVEY'S DIRECT TESTIMONY ON PAGE 98,**
8 **FORWARD PRICES DROPPED FROM \$116.16/MWH ON JUNE 18 TO**
9 **\$85.75/MWH ON JUNE 21, TWO DAYS AFTER THE COMMISSION**
10 **INSTITUTED THE WEST-WIDE CAP. HOWEVER, DR. HARVEY**
11 **STATES ON THIS SAME PAGE THAT THE DROP IN PRICE DOES**
12 **NOT ESTABLISH THAT THE JUNE 19, 2001 ORDER WAS**
13 **RESPONSIBLE FOR THE DECLINE IN FORWARD PRICES. HAS DR.**
14 **HARVEY MISSED ONE OF THE KEY IMPACTS OF THE JUNE 19**
15 **ORDER?**

16 **A.** Dr. Harvey's argument and conclusions are flawed because he has not
17 addressed in any of his testimony the impact of the Commission's order
18 on price volatility in the spot market, which was reduced significantly after
19 the Commission's order, and the impact of price volatility on forward
20 prices. He did recognized, on page 111, lines 16-8, that "[t]he exact
21 relation between the expected future spot price and the contract price will
22 depend on many factors including the relative risk aversion of the parties,"
23 but he fails to mention that according to economic theory the effect of risk

1 aversion on forward prices is amplified proportionally by price volatility.
2 He also fails to mention that market data even after the forward and spot
3 markets stabilized in late 2001 shows a consistent forward price premium
4 in favor of the sellers, which indicates that buyers are more risk averse
5 than sellers.

6
7 **Q. DR. HARVEY NOTES THAT FORWARD CONTRACTS ARE**
8 **IMPORTANT FOR THE CONSTRUCTION OF NEW GENERATION**
9 **FACILITIES. HE STATES ON PAGE 118, LINES 15-17, OF HIS DIRECT**
10 **TESTIMONY “[I]N PARTICULAR, IT IS PRO-COMPETITIVE FOR**
11 **BUYERS TO BE ABLE TO ENTER INTO FORWARD CONTRACTS**
12 **WITH COMPETITIVE SELLERS TO FACILITATE FINANCING OF BOTH**
13 **GENERATION CAPACITY EXPANSION AND, EVEN MORE**
14 **IMPORTANTLY, THE CONSTRUCTION OF NEW GENERATION BY**
15 **ENTRANTS.” ON PAGE 120, LINES 4-7, OF HIS DIRECT TESTIMONY**
16 **HE STATES THAT “[I]T HAS BEEN RECOGNIZED IN THIS**
17 **ECONOMICS LITERATURE [DEALING WITH BARRIERS TO ENTRY]**
18 **THAT THE POTENTIAL BARRIER TO ENTRY OF NEW CAPACITY IS**
19 **MATERIALLY REDUCED, IF NOT ELIMINATED, IF THE ENTRANT IS**
20 **ABLE TO ENTER INTO FORWARD PRICE CONTRACTS FOR ITS**
21 **OUTPUT BEFORE SINKING THE INVESTMENT IN NEW CAPACITY”**
22 **HOW DO YOU RESPOND TO THESE COMMENTS?**

1 A. Dr. Harvey has overlooked a fundamental aspect of PacifiCorp's case with
2 these comments. His line of argument is totally irrelevant to the pending
3 case due to the proximity of the delivery date and the short term of the
4 contracts. Dr. Harvey's argument is no more relevant to the contracts
5 under dispute than it would be relevant to imposing price caps on the day-
6 ahead spot market in the west. No generator would construct new
7 capacity and no bank would finance such construction on the basis of
8 short-term 90-day forward contracts. Furthermore, it is doubtful whether
9 any new capacity could be brought on line in time to serve these
10 contracts. Any discussion of new entry and how forward contracts support
11 such entry is totally irrelevant to the contracts under dispute.

12

13 **Q. WOULD GRANTING PACIFICORP'S REQUEST FOR RELIEF**
14 **BECAUSE OF THE UNIQUE CIRCUMSTANCES INVOLVED IN THIS**
15 **CASE UNDERMINE THE CREDIBILITY OF FORWARD CONTRACTS IN**
16 **THE FUTURE BECAUSE, AS DR. HARVEY SUGGESTS ON PAGE 124**
17 **OF HIS DIRECT TESTIMONY, THERE IS NO CLEAR CRITERIA THAT**
18 **FERC CAN APPLY TO DETERMINE IF A CONTRACT SHOULD BE**
19 **ABROGATED?**

20 A. No. FERC has already taken decisive actions in two distinct
21 circumstances that have bearing on this case. First, FERC has ordered
22 refunds for sales in the West where prices were determined to be unjust

1 and unreasonable. Second, FERC crossed this line when they imposed
2 the price cap on spot prices on June 19, 2001.

3

4 In addition, the Notice of Proposed Rulemaking for a Standard Electricity
5 Market Design explicitly recognizes the need for market mitigation and
6 intervention based on conduct of market participants and on the impact of
7 their actions. FERC's ultimate responsibility is to ensure just and
8 reasonable rates for customers whether they are being served by energy
9 purchased in the spot market or in the forward market. To the extent that
10 forward prices can be mitigated by new generation capacity expansion or
11 by speculative open short positions, competitive forces should be allowed
12 to take their course. However, when such natural mitigation is not present
13 either due to credit risk barriers on open positions or due to proximity of
14 the delivery date that makes new entry irrelevant, as is the case for the
15 PacificCorp contracts, FERC should treat such forward contracts in the
16 same way it deals with the spot market, taking whatever measures are
17 necessary to ensure just and reasonable rates for electricity.

18

19 **Rebuttal to Direct Testimony by Dr. Kalt**

20

21 **Q. DR. KALT DRAWS AN ANALOGY WITH FORWARD CONTRACTS TO**
22 **INSURANCE AGAINST HIGH SPOT PRICES. ON PAGE 16, LINES 5-7,**
23 **OF THE DIRECT TESTIMONY FILED ON OCTOBER 8, 2002 AS**

1 EXHIBIT EPME-1, PROFESSOR KALT NOTES THAT “[B]UYERS
2 EFFECTIVELY PAY THE PREMIUMS FOR THIS PROTECTION BY
3 PAYING PRICES THAT SOMETIMES TURN OUT TO BE ABOVE SPOT
4 PRICES.” AT LINES 12-17, HE FURTHER ARGUES THAT “SUCH
5 CONTRACTS MUST ALWAYS BE EVALUATED *EX ANTE*, I.E., FROM
6 A POINT OF VIEW BEFORE THE UNCERTAINTY SURROUNDING THE
7 TRANSACTION IS RESOLVED, RATHER THAN *EX POST*, OR AFTER
8 IT IS RESOLVED. *EX ANTE*, HOMEOWNER’S FIRE INSURANCE IS
9 OFTEN A REASONABLE INVESTMENT FOR ANYONE WITH ASSETS
10 TIED UP IN THE HOME. *EX POST*, IF THERE IS NO FIRE, THE
11 HOMEOWNER CAN REGRET HAVING PAID INSURANCE THAT
12 ‘WASN’T USED.’” DOES THIS ANALOGY ACCURATELY PORTRAY
13 THE ISSUE IN THIS CASE?

- 14 A. No, this analogy is flawed. In the electricity market, especially when
15 dealing with short-term forward contracts, the same entities that are in the
16 position to raise spot prices through the exercise of market power are also
17 the ultimate underwriters of the insurance policy aimed to protect the
18 buyer against these prices. This situation is analogous to paying
19 protection money to an arsonist rather than to buying fire insurance for
20 protection against an external fire hazard. Furthermore, the protection
21 money was negotiated while the neighbors house was still on fire.

22

1 The fact that the protection money is collected through agents or resellers
2 does not alter the reality that ultimately the power delivered to meet the
3 contractual agreement was to be provided by the same generators and
4 marketers who controlled the spot prices. This is particularly true with
5 regard to the PacifiCorp contracts because the proximity of the delivery
6 date would not have allowed for significant new generation capacity to
7 enter the market and none of the contracts sold to PacifiCorp represented
8 open short positions undertaken by the sellers. Dr. Kalt's analogy is also
9 flawed in that any such "insurance premium" that might be calculated by a
10 buyer would be estimated using standard stochastic analytics that in no
11 way could anticipate an exogenous and one-time event such as the
12 imposition of the FERC price caps. In other words, had the buyer been
13 aware of the inevitability of such caps, no insurance would have been
14 necessary.

15
16 **Q. AT PAGE 17, LINES 14- 17, PROFESSOR KALT NOTES IN HIS**
17 **DIRECT TESTIMONY THAT "[B]Y REDUCING RISK AND PROVIDING**
18 **APPROPRIATE MARKET SIGNALS FOR NEW SUPPLIERS, THE**
19 **FORWARD MARKET FACILITATES ENTRY BY NEW COMPETITORS.**
20 **SELLING POWER FORWARD OFFERS THE PROSPECT OF MORE**
21 **STABLE REVENUES WHICH, IN TURN TENDS TO REDUCE**
22 **FINANCING COSTS." DOES THIS ARGUMENT HAVE MERIT IN**
23 **THESE PROCEEDINGS?**

1 A. No. While this argument may be relevant with respect to long-term
2 contracts is it is totally irrelevant with regard to the Summer 2002
3 Contracts, which are the subject of this proceeding. The proximity and
4 short duration of these contracts makes new entry immaterial. No
5 evidence has been presented to support the claim that the PacificCorp
6 contracts under dispute served as collateral for new investment in
7 generation capacity or that the sellers of these contracts took open short
8 positions to be covered by new generation capacity expansion.

9

10 **Q. PROFESSOR KALT EXPLAINS ON PAGE 36, LINES 4-7, OF HIS**
11 **DIRECT TESTIMONY THAT “EXHIBITS EPME-9A AND 9B SHOW**
12 **THAT FORWARD PRICES IN THOSE SOMEWHAT MORE DISTANT**
13 **PERIODS – WHEN GENERATION FACILITIES ARE EXPECTED TO**
14 **ENTER OPERATION – ARE CONSIDERABLY LOWER THAN**
15 **NEARER-TERM PRICES.” DOES THIS PRICE TREND RELATE TO**
16 **THE CONTRACTS THAT ARE AT ISSUE IN THIS CASE?**

17 A. No. This argument is irrelevant to the Summer 2002 Contracts procured
18 by PacifiCorp. Further, no evidence was presented to support the
19 assertion that such near-term and short duration contracts would affect
20 new entry or the prices in these contracts would be affected by potential
21 new entry. The prospect of new entry does not explain the decline in the
22 prices of Summer 2002 90-day contracts after FERC’s June 19 Order.
23 Professor Kalt’s focus on forward prices in distant delivery periods

1 strengthens the argument that, in the long run, all market participants
2 expect electricity to trade near the marginal cost of production and that
3 persistent deviations from this price level are indicative of market
4 dysfunction.

5

6 **Q. ON PAGE 43, LINES 5-8, OF HIS DIRECT TESTIMONY, PROFESSOR**
7 **KALT STATES THAT “THERE HAS BEEN NO EVIDENCE OF MARKET**
8 **POWER IN FORWARD MARKETS; AND GIVEN THE NUMBER OF**
9 **SELLERS OF BULK POWER WITH WHICH COMPLAINANT CAN AND**
10 **DOES DEAL, IT IS NOT PLAUSIBLE THAT MARKET POWER COULD**
11 **BE EXERCISED BY MERCHANT OR ANY OTHER SELLER.”**
12 **FURTHERMORE, ON PAGE 45, LINES 3-4, HE STATES THAT**
13 **“[T]HERE ARE NO MEANINGFUL BARRIERS TO COMPETITION**
14 **AMONG SELLERS IN FORWARD MARKETS.”? PLEASE EVALUATE**
15 **THESE STATEMENTS.**

16 **A.** Professor Kalt has overlooked some elementary assumptions, and his
17 argument is flawed since in the absence of new entry and open short
18 forward positions, as competitive as the sellers market may be, such
19 competition among sellers will only drive down the markup on resold
20 forward contracts, but the resellers are still able to propagate inflated
21 contract prices affected by market power in generation. In a competitive
22 market, sellers can only mitigate forward prices inflated through the
23 exercise of market power in generation if they take open short positions

1 that they cover through new construction of generation capacity or through
2 reliance on future spot markets. Tight credit affected in part by market
3 dysfunction creates significant barriers to such mitigation alternatives.
4 With regard to the PacifiCorp contracts, new construction was irrelevant to
5 due to the short proximity of the delivery date whereas speculative open
6 short positions are virtually non-existent in the U.S. western electricity
7 markets due to the perceived high risk of such positions, especially during
8 market dysfunction.

9
10 **Q. ON PAGE 47, LINES 1-15, OF HIS DIRECT TESTIMONY PROFESSOR**
11 **KALT STATES THAT “EXHIBIT EPME-18, FOR EXAMPLE, REPORTS**
12 **THE RELATIONSHIP BETWEEN WEEK-TO-WEEK MOVEMENTS IN**
13 **WESTERN SPOT AND FORWARD PRICES. THE EXHIBIT LOOKS AT**
14 **THE WEEKLY TRENDS IN WESTERN SPOT PRICES AND FOUR**
15 **FORWARD CONTRACTS’ PRICES . . . OVER THE PERIOD IN WHICH**
16 **THE FORWARD CONTRACTS WERE TRADING (AUGUST 2000 TO**
17 **JUNE 2001 FOR THE THIRD QUARTER 2001 CONTRACT AND APRIL**
18 **2001 TO MAY 2002 FOR THE THIRD QUARTER 2002 CONTRACTS).**
19 **THE EXHIBIT SHOWS THAT, FOR UPWARDS OF APPROXIMATELY**
20 **40% OF THE TIME, SPOT PRICES AND FORWARD CONTRACT**
21 **PRICES TRENDED IN DIFFERENT DIRECTIONS DURING THE**
22 **COURSE OF THE WEEK. THIS IS CONSISTENT WITH THE**
23 **EXPECTATION OF SUPPLY AND DEMAND ANALYSIS THAT SPOT**

1 **AND FORWARD PRICES WERE RESPONDING TO SUPPLY/DEMAND**
2 **CONDITIONS THAT WERE SPECIFIC TO EACH MARKET. THESE**
3 **RESULTS ARE INCONSISTENT WITH ASSERTIONS THAT SPOT**
4 **PRICES ‘DROVE’ FORWARD PRICES.” IS THIS APPROACH**
5 **FLAWED?**

- 6 A. Yes. The analysis presented by Professor Kalt in Exhibit No. EPME-18
7 misleads the reader and the conclusion drawn from it is not credible. The
8 basic flaw in this analysis is that it records weekly trends without
9 considering the magnitude of the movements. To illustrate the basic flaw
10 in Professor Kalt’s analysis, consider a hypothetical scenario where
11 forward and spot prices would only exhibit significant movements every
12 other week. Suppose that during the “stable prices” weeks the forward
13 price and the spot price move by \$1/MWh in opposite directions while
14 during the “significant movement” weeks both spot and forward prices
15 move in the same direction by \$20/MWh. This is an undisputable case
16 where forward and spot prices are closely related by any conventional
17 statistical measure. Yet if we apply Professor Kalt’s methodology to this
18 case it would indicate that the movements in the spot and forward prices
19 were in opposite directions 50% of the time leading him to the erroneous
20 conclusion that the spot and forward prices move independently
21 “responding to supply/demand that were specific to each market”.

22

1 Q. PROFESSOR KALT OBSERVES ON PAGE 68, LINE 14 THROUGH
2 PAGE 69, LINE 2, OF HIS DIRECT TESTIMONY THAT: “[F]ORWARD
3 CONTRACTS ACT LIKE A FORM OF INSURANCE, WITH
4 ‘INSURANCE’ PROVIDED WHEN SPOT PRICES RISE
5 PRECIPITOUSLY AND THE BUYER IS PROTECTED AGAINST HIGH
6 PRICES BY BEING ABLE TO ACQUIRE POWER AT LOWER PRICES
7 DUE TO THE FORWARD CONTRACT. PERIODS WHEN SPOT
8 PRICES ARE LOW, BUT THE BUYER UNDER THE FORWARD
9 CONTRACT PAYS A PRICE HIGHER THAN THE SPOT PRICE,
10 REPRESENT PAYMENT OF THE INSURANCE ‘PREMIUMS.’ LIKE
11 MOST INSURANCE, PAYING FOR IT SEEMS LIKE AN EXCESS –
12 UNTIL IT’S NEEDED.” PLEASE EVALUATE THIS ANALOGY.

13 A. Professor Kalt has overlooked an obvious difference between the forward
14 contracts in this case and the situation of hazard insurance. As I have
15 discussed above, Dr. Kalt’s insurance analogies miss the most basic
16 aspects of this case. Even if we accept the insurance analogy, however,
17 insurance premiums are typically regulated and furthermore premiums for
18 insurance against price risk depend on price volatility. The impact of price
19 volatility on the premium for insurance against price risk is quantified for
20 example, by the Black Scholes formula when prices are assumed to follow
21 Geometric Brownian Motion. Therefore, to the extent that market
22 dysfunction has affected price volatility (as evidenced by the data) and
23 since FERC took measures to mitigate such dysfunction, FERC should

1 also modify the “insurance premiums” that were imposed on buyers due to
2 the excess price volatility resulting from market dysfunction. According to
3 Professor Kalt, in requesting modification of the contracts procured while
4 the spot market was dysfunctional PacificCorp is asking the Commission
5 “to make the forward market suppliers provide free insurance.” (Exhibit
6 No. EPME-1 at 69:3-69:4.) Actually, PacificCorp is merely asking for
7 adjustments in the insurance premium it was charged due to the high price
8 volatility caused by the dysfunction in the spot market.

9
10 **Q. IN ONE OF HIS ARGUMENTS AGAINST CONTRACT REFORMATION**
11 **ON PAGES 69-70 OF HIS DIRECT TESTIMONY, PROFESSOR KALT**
12 **ARGUES THAT FERC ADVOCATED FORWARD CONTRACTING IN**
13 **2000 AND 2001 AS AN “ANTIDOTE TO DYSFUNCTION” AND TO**
14 **ADDRESS OVER-RELIANCE ON THE SPOT-MARKET. PLEASE**
15 **RESPOND.**

16 **A.** Professor Kalt has glossed over the close connection between the spot
17 market and the forward markets in which PacificCorp purchased the
18 Summer 2002 Contracts? Professor Kalt draws an artificial distinction
19 between the spot (i.e., real-time or day-ahead) market and the short-term
20 forward markets which feature standardized products. While the clearing
21 mechanisms are different in these two markets (auction vs. OTC trades)
22 there is no reason to assume that dysfunction in the spot market stops
23 there. On the contrary, short-term forward contracts where delivery is too

1 close to be impacted by new entrants offering such contracts are likely to
2 be affected by the same dysfunction as affected the spot market. To the
3 extent that FERC has determined that prices in excess of \$92 are not just
4 and reasonable for electric energy procured in the spot market, there is no
5 reason to believe that such prices would be just and reasonable for
6 electric energy procured in the short-term forward market. A megawatt-
7 hour used to serve customers is the same no matter how it was procured
8 as long as it is produced by the same generation stock.

9
10 **Rebuttal to Direct Testimony of FERC staff Dr. Jonathan D. Ogur**

11
12 **Q. ON PAGE 5, LINES 4-5, OF THE DIRECT AND ANSWERING**
13 **TESTIMONY FILED DR. OGUR IN EXHIBIT NO. S-11 ON NOVEMBER**
14 **15, 2002, DR. OGUR STATES THAT “[F]ORWARD MARKETS**
15 **PROVIDE INSURANCE AGAINST UNFAVORABLE PRICE CHANGES**
16 **AND PROMOTE COMPETITION BY FACILITATING ENTRY AND**
17 **EXPANSION OF CAPACITY.” DOES THIS STATEMENT APPLY TO**
18 **THE PACIFICORP CONTRACTS AT ISSUE HERE?**

19 **A.** This statement overlooks important issues pertaining to the Summer 2002
20 Contracts. When high spot prices are the result of market power in
21 generation, that market power can be extended to the forward market by
22 the same generators and marketers who control the supply of physical
23 cover of the forward contracts. In theory, such market power in the

1 forward markets can be mitigated through new entry (i.e., construction of
2 new generation capacity) and arbitrage by speculators who could take
3 open short positions in the forward market with the intent to cover their
4 positions in the spot market. In practice, however, such mitigation has not
5 taken place particularly when dealing with short duration, near-term
6 forward contracts such as the 90-day Summer 2002 Contracts procured
7 by PacificCorp. First of all, because of the close proximity of the delivery
8 date and the short contract duration, entry of new generation cannot play
9 a role in mitigating the prices of such contracts. Second, in spite of the
10 theoretical possibility, credit risk appears to limit speculative arbitrage
11 between the forward and spot market. This reality, in combination
12 of[with?] the risk aversion of load serving entities that were encouraged by
13 FERC to enter into forward contracts, enables generators and marketers
14 who control the supply of physical cover for forward contracts to sustain
15 high forward prices in excess of expected future spot prices.

16
17 **Q. ON PAGE 15, LINES 3-5, OF HIS DIRECT AND ANSWERING**
18 **TESTIMONY DR. OGUR STATES THAT “[I]F THE FLAWS WERE**
19 **EXPECTED TO CONTINUE DURING THE PERIODS WHEN THE**
20 **CONTRACTS WERE IN EFFECT, AND ENABLED SELLERS TO RAISE**
21 **SPOT PRICES DURING THOSE PERIODS, THEN THE FLAWS COULD**
22 **HAVE HAD AN ADVERSE EFFECT ON THE CONTRACTS IN THIS**
23 **CASE.” DO YOU AGREE WITH THIS STATEMENT?**

1 A. I do agree with the statement. However, Dr. Ogur overlooks in this
2 statement and in other parts of his testimony the importance of price
3 volatility and the impact of market dysfunction on spot prices volatility. All
4 the arguments attributing high spot and forward market prices to market
5 fundamentals concern expected price levels. Changes in fundamentals
6 could indeed affect expected spot price levels but should not affect price
7 volatility. However, forward prices are affected not only by expected spot
8 price levels but also by price uncertainty (volatility). Price volatility plays a
9 major role in determining the risk premiums embedded in forward prices
10 and market dysfunction resulted in excessive spot price volatility that
11 translated into excessive forward prices. Dr. Ogur's testimony is silent
12 about the effect of FERC's mitigation measures on spot price volatility and
13 on how the changes in volatility could have impacted forward prices.

14

15 **Q. ON PAGE 17, LINES 7-10, OF HIS DIRECT AND ANSWERING**
16 **TESTIMONY DR. OGUR STATES “[B]ASED ON ITS DIRECT**
17 **TESTIMONY, I BELIEVE PACIFICORP HAS NOT ADEQUATELY**
18 **DISTINGUISHED BETWEEN THE EFFECT OF COMPETITIVE MARKET**
19 **FUNDAMENTALS AND THE EFFECT OF MARKET FLAWS. AS A**
20 **RESULT, THE COMPLAINANT HAS NOT MET THE BURDEN OF**
21 **PROOF THAT THE COMMISSION SET FOR IT IN THIS**
22 **PROCEEDING.” DO YOU AGREE WITH THIS CONCLUSION?**

1 A. No. In my opinion PacificCorp has clearly demonstrated the impact of the
2 market dysfunction mitigated by FERC's June 19 Order on its forward
3 contracts employing both "fundamental" and "technical" analyses. The
4 fundamental analysis performed by Dr. Mount has demonstrated that most
5 of the variability in the ratio of forward electricity to forward gas prices for
6 August 2001 and August 2002 delivery can be explained by the spot
7 electricity prices during the period of market dysfunction. Dr. Mount's
8 exclusion of other market fundamentals from that analysis was justified by
9 the fact that no other market fundamental variables were significant
10 according to the regression study presented by Dr. Hogan and Harvey in
11 the Nevada Power case.

12
13 The "technical" analysis presented in my Direct Testimony is based on
14 direct analysis of the price process and the implied volatility. Specifically, I
15 have demonstrated that FERC's June 19 price cap has stripped off[?] the
16 PacificCorp forward contracts a call option with a strike price of \$91.87
17 whose value can be determined by means of the Black Scholes formula.
18 This impact is net of any effect due to fundamentals since it is based on
19 the given forward prices (which already incorporate the effect of expected
20 fundamentals) and historic volatility measures. This impact represents the
21 fair adjustment in insurance premium paid by PacificCorp as part of the
22 forward prices due to changes in price risk in the aftermath of the June 19
23 Order.

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Q. ON PAGE 18, LINE 17 THROUGH PAGE 19, LINE 3, OF HIS DIRECT AND ANSWERING TESTIMONY DR. OGUR DISPUTES YOUR MEASURE OF MARKET POWER AS THE DIFFERENCE BETWEEN PRICE AND THE MARGINAL COST OF THE MOST EXPENSIVE UNIT NEEDED TO MEET DEMAND. HE CLAIMS THAT “THESE MEASURES DO NOT ACCURATELY ASSESS THE EFFECT OF MARKET POWER, OR THE EFFECT OF MARKET FLAWS, TO THE EXTENT THAT GENERATING CAPACITY IS FULLY UTILIZED (MSC-1 AT 78-81). IF CAPACITY IS FULLY UTILIZED, THE COMPETITIVE PRICE CAN REMAIN ABOVE THE MARGINAL COST OF THE MOST EXPENSIVE GENERATING UNIT NEEDED TO MEET DEMAND FOR EXTENDED TIME PERIODS. THIS IS TRUE ESPECIALLY IN MARKETS SUCH AS ELECTRICITY WHERE CAPACITY IS ADDED IN SUBSTANTIAL INCREMENTS WITH SIGNIFICANT LEAD TIMES.” ON PAGES 19-20, DR. OGUR ALSO CRITICIZES THE RESULTS OF BORENSTEIN, BUSHNELL, AND WOLAK ON GROUNDS THAT THEY DO NOT PROPERLY ACCOUNT FOR SCARCITY RENTS. DO YOU AGREE WITH THESE ARGUMENTS?

A. In theory Dr. Ogur is correct in his assertion that competitive prices can at times exceed the marginal cost of the most expensive MW produced due to possible scarcity rents. He fails to mention, however, that scarcity rents cannot exist when the competitive price is set by a generator’s offer.

1 According to economic theory, in the absence of congestion, competitive
2 prices reflecting scarcity rents can only be set by unserved load. Indeed it
3 is possible that when supply is exhausted the price is set by the highest
4 valued curtailed unit or alternatively by the highest accepted demand side
5 offer (for curtailment) above the marginal cost of the most expensive unit
6 of electricity produced. In such a case, the market clearing price is set by
7 the curtailed demand and the difference between the clearing price and
8 the marginal cost of the most expensive unit of electricity is defined as the
9 "scarcity rent."

10

11 Therefore, in a well-functioning competitive market generators and
12 marketers can be paid prices that exceed their marginal cost either
13 because a more expensive unit has been dispatched or because capacity
14 has been exhausted and the price is set by curtailed demand. When
15 congestion is present and demand is inelastic it is also possible to have
16 locational prices in a load pocket that reflect transmission scarcity that
17 exceed the marginal cost of the most expensive unit of electricity
18 produced, due to the redispatch cost associated with serving incremental
19 demand in a load pocket. Under no circumstance, however, it is justified
20 for a generator to submit an offer above its marginal cost. Whenever a
21 generator's offer sets the market clearing price then by definition there is
22 no scarcity and whenever a generator or marketer submits an offer above
23 its marginal cost it indicates an attempt to exercise market power.

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To my knowledge, even when load was curtailed in California through rotating outages the prices were set either by generators and marketers or by a price cap. In none of these instances were the market clearing prices set by interruptible load, and the fact that generators and marketers offered to produce at high prices precludes[?] the possibility that generation capacity has been exhausted, as suggested [?]by Dr. Ogur.
[not sure what this sentence is supposed to say...]

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10 Q.

ON PAGE 19, LINE 18, THROUGH PAGE 20, LINE 3, OF HIS DIRECT AND ANSWERING TESTIMONY, DR. OGUR STATES: “THE BORENSTEIN, BUSHNELL, AND WOLAK METHODOLOGY APPEARS NOT TO TAKE MARGINAL SUPPLIERS’ SCARCITY RENTS INTO ACCOUNT. THESE SCARCITY RENTS HAVE TO BE TAKEN INTO ACCOUNT IN ORDER TO ADEQUATELY DISTINGUISH THE EFFECTS OF COMPETITIVE MARKET FUNDAMENTALS FROM THE EFFECT OF MARKET FLAWS.” DO YOU AGREE WITH THIS CRITICISM OF THE BORENSTEIN, BUSHNELL, AND WOLAK PAPER?

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19 A.

No. The Borenstein, Bushnell, and Wolak paper was careful to exclude data for time periods in which prices were affected by congestion. Furthermore, none of the market prices in the data were set by demand side offers. Therefore, there could not have been any scarcity rent in the time periods analyzed. Dr. Ogur’s criticism of the Borenstein, Bushnell,

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1 and Wolak paper is unwarranted since there were no instances of scarcity
2 rents in the examined data set and the paper accounted for all competitive
3 infra-marginal rents. Dr. Ogur dismisses the results of an excellent study
4 on grounds of a theoretical possibility that had no footing in reality and has
5 not been substantiated by Dr. Ogur.

6

7 **Q. Does this conclude your testimony?**

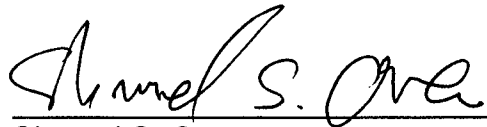
8 **A. Yes.**

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PacifiCorp)	
)	
v.)	
)	
Reliant Energy Services, Inc.,	)	Docket No. EL02-80-000
)	
Morgan Stanley Capital Group, Inc.,	)	Docket No. EL02-81-000
)	
Williams Energy Marketing & Trading Company, and	)	Docket No. EL02-82-000
)	
El Paso Merchant Energy, L.P.	)	Docket No. EL02-83-000
)	
	)	(consolidated)

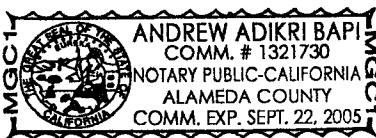
**AFFIDAVIT
OF
SHMUEL S. OREN**

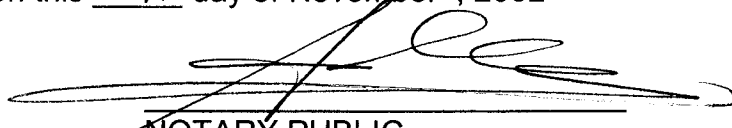
Shmuel S. Oren, on oath, deposes and states that the foregoing Affidavit and Exhibits, on behalf of the PacifiCorp were prepared by him or at his direction and under his supervision, and that if asked the question herein, he would give the answers as shown, and that the facts stated herein are true to the best of his knowledge, information and belief.



 Shmuel S. Oren

Subscribed and sworn to before me on this 19TH day of November , 2002





 NOTARY PUBLIC
 My Commission Expires: SEPT-22ND 2005