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BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 2002-01

EXHIBIT 27R.0 (MAK-RT)

BP WEST COAST PRODUCTS, LLC

BP CHERRY POINT COGENERATION
PROJECT

APPLICANT'S PREFILED REBUTTAL TESTIMONY

MICHAEL A. KYTE

Q. Please reintroduce yourself to the Council.

A. My name is Michael Kyte, and my business address is:

Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, Washington 98052

EXHIBIT 27R.0 (MAK-RT)

MICHAEL A. KYTE

REBUTTAL TESTIMONY - 1

[/27R.0(MAK-RT).DOC]

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Q. What testimony are you responding to?

A. I am addressing the wastewater-related testimony in the prefiled direct testimony of Dr. Kate Stenberg, witness for Whatcom County.

Q. Would you please remind the Council of your experience?

A. I have over 30 years of experience specializing in coldwater environments and habitats throughout the Pacific Northwest, Alaska, and New England. Within this 30 years of experience, I have been conducting marine environmental studies and evaluating impacts of industrial activities in the Cherry Point area since 1967. I conducted studies on the effects of wastewater discharge, dredging, pier expansion, normal daily activities, and natural variation in baseline conditions.

Q. Turning to Dr. Stenberg’s testimony, she begins by critiquing the Cogeneration Application as inadequate in its documentation and evaluation of potential wastewater discharge impacts to the Cherry Point nearshore habitats. How do you respond to this charge?

A. Apparently Dr. Stenberg did not examine all the available documentation and information provided with the Cogeneration application. In addition to the DEIS, Sections 3.3 and 3.4 of the EFSEC application, Appendices F (Water) and H-5 (Biological Evaluation), and both the prefiled testimonies of William Martin (Exhibits 26.0, 26.2, and 26.3) and myself (Exhibit 27.0) address issues of wastewater discharge and the potential effects of this wastewater on the Refinery

1 wastewater stream and the marine receiving waters and associated biota. This
2 treatment is quite extensive given the expected effect of the Cogeneration wastewater
3 stream on both the Refinery wastewater and the marine receiving waters. Based on
4 my experience with permitting marine industrial developments, the level of
5 information and analysis is more than sufficient and more than typically used to make
6 similar permitting decisions. Significantly, this information has been reviewed by
7 EFSEC's independent consultant, Shapiro Associates, and the Department of Ecology
8 permit writer, and both have found the information sufficient to understand the
9 potential impacts of the project.
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21 As an example, within the EFSEC application materials, a Biological Evaluation (BE)
22 prepared according to Section 7(c) of the Endangered Species Act is provided in
23 Appendix H-5. It describes the marine receiving environment (Section 3.3.3) and the
24 potential effects of Cogeneration wastewater discharge on that environment (Section
25 5.2.5).
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31 Complementing these documents was my testimony (Michael Kyte 27.0) on the
32 impacts of wastewater discharge to the marine environment. This testimony included
33 extensive citations on toxicity testing of the Refinery's current wastewater. The fact
34 that there is and will be no adverse impact to the marine environment is supported by
35 this toxicity testing. This testing includes acute, chronic, and whole effluent toxicity
36 (WET) testing. The Refinery has for many years performed quarterly acute bioassay
37 testing on the final effluent at 100 percent effluent and at the "acute critical effluent
38 concentration" (ACEC) (approximately 3.6 percent effluent). The ACEC is
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1 comparable to a “no observed effect concentration” (NOEC) commonly used in
2 bioassay toxicity testing. Four quarters of WET chronic toxicity bioassay is
3 conducted in each 5 – year NPDES permit period. This study was conducted in 2002
4 as prescribed. The WET testing for the current permit period found no toxicity and
5 monitoring has shown the Refinery to be in compliance for at least the last four years.
6 As explained in my direct testimony, the discharge from the Refinery water treatment
7 system will not change materially as a result of the Cogeneration project. Therefore,
8 the bioassays done to date provide strong evidence that the combined discharge from
9 the Refinery and Cogeneration project will not adversely affect nearshore habitats.
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21 **Q. In her specific criticisms, Dr. Stenberg contends that the DEIS left out pertinent**
22 **information about temperature impacts from the Cogeneration wastewater. In**
23 **your opinion, have potential temperature impacts from the Cogeneration project**
24 **been adequately analyzed and addressed?**
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28 A. Yes, the potential temperature impacts of Cogeneration project wastewater on the
29 temperature regime of marine receiving water are adequately addressed in the
30 application and DEIS materials.
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37 Dr. Stenberg cites Table 3.4-5 in DEIS, but apparently did not examine the
38 corresponding section (3.3) and table (3.3-4) in the EFSEC application that state there
39 will be “no change” in the water temperature. As explained in Mike Torpey’s
40 testimony, the statement in the DEIS indicating that there will be a 1% change in
41 temperature is incorrect. By the time the Cogeneration wastewater is commingled
42 with the Refinery wastewater and processed through the treatment system, there will
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1 be no measurable change in the temperature of the wastewater discharge. In addition,
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3 Dr. Stenberg apparently was not aware of my testimony (Exhibit 27.0) in which I
4
5 specifically discuss the potential effects of the Cogeneration wastewater on the
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7 temperature characteristics of the Refinery wastewater stream and the marine
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9 receiving water.
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12 Even if, as the DEIS erroneously suggests, there were to be a one percent increase in
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14 the temperature of the discharged combined wastewater, this would still likely have
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16 no effect on conditions within the permitted acute and chronic dilution zones or on
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18 the marine receiving waters surrounding these mixing zones. A one percent increase
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20 would translate to an approximately 0.8 degree Centigrade temperature rise of the
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22 wastewater stream. Further, if this one percent increase was carried into the Zone of
23
24 Initial Dilution (ZID), and it is assumed that the temperature of the receiving water
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26 were to also increase by the same amount, the increase could be approximately 0.1
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28 degree Centigrade.¹ In fact, however, the volume of receiving water is so much
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30 larger than the wastewater from the Refinery and Cogeneration project that no
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32 measurable impact on the receiving water is expected. A change of less than one
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34 degree prior to the near-instantaneous mixing would be indiscernible because of the
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36 substantial variation in natural conditions in the receiving environment and the
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38 vigorous mixing by wind and tidal currents flowing through the dilution zones. In
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44 ¹ Based on measured and modeled temperatures within the ZID as presented in Table
45 3-6 of ENSR Consulting and Engineering. 1991. NPDES Effluent and Water Quality Monitoring
46 Study Dilution Ratio Study. Report prepared for ARCO Petroleum Products Cherry Point Refinery,
47 February 1991.

1 any case, discharged wastewater will be completely mixed with receiving water at the
2 edge of the chronic dilution zone, and the temperature would be unaffected.
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6 **Q. Dr. Stenberg asserts that the Application and DEIS appear to simply assume no**
7 **adverse impacts to salmonids and forage fish because the wastewater is**
8 **discharged pursuant to a valid permit. Was the existence of a valid permit the**
9 **basis for your conclusion that the wastewater from the Cogeneration project**
10 **would have no adverse impact on these species?**
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16 **A.** No, the existence of a valid permit was not the basis of my conclusion that the
17 wastewater from the Cogeneration project would have no adverse impact on these
18 species.
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25 As discussed previously, an ESA BE was prepared and presented as Appendix H-5 in
26 the EFSEC application materials. The BE relied on existing information and
27 literature. Although it did recognize the existence of permits regulating wastewater
28 discharge, that was not the basis of its conclusions. The sections within the EFSEC
29 application on which the DEIS was based also relied on information available in
30 existing literature and that was generated from studies for the EFSEC application. It
31 is this information and the analysis of it that supported the conclusion that the
32 Cogeneration wastewater would have no adverse impact.
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43 As stated in a previous question, the NPDES permit requires testing and monitoring
44 of discharged wastewater. It is the results of this testing and of additional studies
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1 described by my previous testimony and by the ESA BE that support my conclusion
2 that there will be no adverse impacts, not the existence of a permit.
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7 In sum, in the area of the outfall, water velocities generated by tidal currents of up to
8 one knot or more flow through the dilution zone causing vigorous mixing and
9 dispersion of the wastewater. As a result, any substance contained in the wastewater
10 and any increased temperature is very rapidly reduced to ambient levels. In such
11 conditions, it is unlikely that herring or salmon adults, juveniles, or larvae could be
12 subjected to heightened concentration of any substance or excess temperatures long
13 enough to harm them -- even if they swam into or were carried through the dilution
14 zone itself. According to modeling by Ecology, the Refinery effluent will be diluted
15 within the ZID at a factor of 28:1. Outside the ZID, the effluent will be diluted at a
16 factor of 157:1 before reaching the edge of the chronic dilution zone where all
17 parameters must be equal to those of the ambient receiving water. There is no
18 evidence from bioassay testing or observations of the environment that fish
19 populations, including herring and salmonoids, are affected at these levels of dilution.
20 Moreover, measurements in 1990² using dye injected into the Refinery effluent
21 showed that the actual dilution ratio within the ZID was 144 to 1 and the dilution at
22 the edge of the chronic dilution zone was 1,709 to 1. There is no evidence to suggest
23 that impacts to fish populations or food sources would occur at such levels.
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45 ² ENSR Consulting and Engineering. 1991. NPDES Effluent and Water Quality Monitoring
46 Study Dilution Ratio Study, ARCO Petroleum Products Cherry Point Refinery. Document number
47 0480-086-200. Report prepared for ARCO Petroleum Products Cherry Point Refinery, January 1991.

1 **Q. Dr. Stenberg’s testimony sums up her concerns regarding the project’s**
2 **wastewater discharge in her paragraph on page 9 asserting that changes in the**
3 **quality of the wastewater discharge at Cherry Point may affect eggs or larvae of**
4 **forage fish species which may then affect the populations of those fish species**
5 **which may then affect other species, including threatened salmonids and**
6 **heron. How do you respond to those concerns?**
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15 **A.** Like much of Dr. Stenberg’s testimony, these statements are entirely hypothetical.
16 Although a change in discharge “could” affect eggs and larvae, the change resulting
17 from the Cogeneration Project will not. As shown by the EFSEC application and my
18 previous testimony, analyses show that no adverse impact will occur. Existing
19 Refinery discharges do not harm eggs and larvae, and the Cogeneration Project will
20 not materially change those discharges.
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28 Dr. Stenberg appears to be implying that there will be impacts to forage species that
29 use the eelgrass beds in the vicinity of Cherry Point. Only one forage fish species
30 spawns on eelgrass in this area, and this is Pacific herring. Other forage fish, surf
31 smelt and sandlance, use beaches along the Cherry Point shoreline for spawning.
32 Sandlance deposit their eggs on sand in the upper intertidal zone during winter
33 months. Surf smelt use the same habitat, but spawn most frequently in the summer
34 months.³
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45 ³ Penttila, D.E. 2000. Documented spawning seasons of populations of the surf smelt,
46 *Hypomesus*, in the Puget Sound Basin. Washington Department of Fish and Wildlife Marine
47 Resources Division Briefing Report.

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Pacific herring has received a large amount of attention in recent years because of significant declines in abundance. Recent ecological risk assessments⁴ and other studies showed that the decline of herring is not due to effects from wastewater. Indeed, testing of discharged wastewater did not show the presence of contaminants that would act as toxic pollutants on herring embryos and larvae. The Cherry Point Refinery and the other industrial facilities along the Cherry Point shoreline are required to conduct herring embryo or larvae bioassays, or their equivalent, on their wastewater. This testing has not shown any toxicity in the effluent.

Finally, large numbers of adult and juvenile herring likely do not use eelgrass beds during low tide because of insufficient water cover when great blue herons forage in this habitat. Thus, it is unlikely that herring compose a significant portion of herons' diet. Also, it should be recognized that spawning herring are in the vicinity of Cherry Point for only a short period of time, approximately two weeks, in the period between March 15 and June 15.

The conclusion that herons do not depend on herring is also supported by a 5 – year study of heron colonies in British Columbia.⁵ This study did not show that herons

⁴ E.g., EVS Environment Consultants, Inc. 1999. Cherry Point Screening Level Ecological Risk Assessment. Prepared for the Washington Department of Natural Resources, Aquatic Resources Division. January 1999.

⁵ Butler, R.W. 1995. The patient predator: foraging and population ecology of the Great Blue Heron *Ardea herodias* in British Columbia. Occasional Paper Number 86. Canadian Wildlife Service. 44 pages.

1 consumed herring at any time despite the fact that the nesting colonies that were
2
3 studied were located along shorelines that are heavily used by herring for spawning.
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5 **END OF TESTIMONY**
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