Response To Comments Submitted by Roberta Blank (U.S. EPA) on the Operable Unit 2 Draft Final Risk Assessment (Dated March 2, 1993) NAS Moffett Field, California

1. Due to the paucity of studies of absorption of chemicals in soil, the U.S. EPA does not currently recommend a particular method for deriving dermal absorption coefficients. However, the U.S. EPA has reviewed the existing models in the document "Dermal Exposure Assessment: Principles and Applications" (EPA, 1992).

   The method used to estimate the dermal absorption coefficients for organic chemicals in the OU2 risk assessment is based upon the dermal uptake model by McKone (1990). Although this model has not been fully evaluated by EPA, it has been used for purposes of dermal exposure assessment in some EPA regions.

   The approach is based upon a fugacity model that employs physical-chemical properties of the compound and the soil to estimate transport across the soil and skin layer. The model also accounts for evaporation. McKone noted general relationships between the soil loadings on the surface of the skin, the octanol/water partition coefficient and Henry's Law constant. McKone applied this concept to a number of chemicals. These relationships are represented in a series of graphs in McKone's report. Chemical-specific absorption coefficients for the organic chemicals of potential concern associated with OU2 were derived from these graphs. The OU2 risk assessment will be revised to include this explanation and an example in an appendix to the text. The dermal absorption coefficients for the organic chemicals are provided in Table 20.3-10a in the current version of the OU2 risk assessment.

   As stated in the current OU2 document, the aforementioned approach does not apply to metals and other inorganics. A study of the dermal absorption of cadmium (Wester, 1991) is cited in the U.S. EPA document on dermal exposure assessment. A range of coefficients from 0.1% to 1.0% was identified in the Wester study. Therefore, the lower of two experimental values (0.001) was used for cadmium in OU2 risk assessment. Since values were not available for other metals, a conservative coefficient was estimated by applying a safety factor of ten (10) to the value of 0.001 assumed for cadmium. This explanation will be added to the appendix. The dermal absorption coefficients for inorganics are listed in Table 20.3-10a.

   References:

U.S. EPA (1992)
"Dermal Exposure Assessment: Principles and Applications"; EPA 600/8-91/011B

McKone, T. (1990)
"Dermal Uptake of Organic Chemicals from a Soil Matrix"; Risk Analysis 10 (3): 407-419

Wester, R. C., Maibach, H.I., Sedik, L., Melendres, J., DiZio, S., Jamall, I., Wade, M. (1991)

"In Vitro Percutaneous Absorption of Cadmium from Water and Soil," Toxicol 11: 289 Abstracts of the 30th Annual Meeting.

2. Tables 20.6-1 through 20.6-8 were presented in the July 1992 draft final risk assessment. These tables described risks associated with background as well as provided estimates of risk associated with the reported detection limits. However, these tables were inadvertently omitted from the current revision of the report. Section 20 of the document will be revised to include tables as well as a discussion of background risk.

3. Original conclusions for a small number of OU2 sites noted that potential leaching of methylene chloride to shallow groundwater could exceed MCLs. Since methylene chloride is a common laboratory contaminant, these conclusions were evaluated very closely. It was determined that the original risk assessment had queried data that was not fully validated. A review of the fully validated data base noted that methylene chloride was attributed to laboratory contamination. For the draft final RI, the validated data base is included as Appendix A and this is the data set used for the risk assessment evaluation. Any effect as a result of using this data base is reflected in the conclusions now being made. Again, the changes were not strictly with the data base, but with queries to the data base (fully validated version).

4. IT reviewed the draft report "Additional Tank and Sump Field Investigation Technical Memorandum" (PRC, 1992) in which additional data for the Tank 53 was published. The evaluation of the data indicated that twenty-four soil samples were collected and analyzed using the Geoprobe® method. The Geoprobe® method consists of a headspace analysis which is used for screening purposes. These data will be summarized in a table which will appear in the revised document. It should be noted that the data from these analyses were not subject to CLP or equivalent validation.

   Thirteen of the twenty-four soil samples were submitted for laboratory confirmation. The data from these analyses will also be added to the risk assessment for Site 19. Compounds that were detected by the laboratory will be evaluated quantitatively by applying the same occupational exposure scenarios which were used in previous evaluations for Site 19. There is also available data from a previous tank and sump report (PRC 1991) and it will be included with the 1992 data for evaluation.

   While benzene was detected in the Geoprobe® analyses, it was not detected in the confirmation process (PRC, 1992). The presence of benzene in the screening analyses will be noted in the text of the OU2 risk assessment. However, since data from the Geoprobe® method are not validated, they are not appropriate for use in the risk assessment. Therefore, benzene (PRC, 1992) will not be evaluated quantitatively. However, there are benzene detections from the 1991 investigation and these concentrations will be evaluated quantitatively.

Although the Summers model for leachate potential was run for data from the two tanks near Hanger 3, it will not be applied to the Tank 53 data. Since the Tank 53 area is associated with groundwater that has very high concentrations (approximately 20,000 ppm) of total dissolved solids (TDS), the aquifer is not expected to serve as a source of potable water in the future. However, TDS levels at Hanger 3 are less than 10,000 ppm and that is why the Summers model is applied there.

It should be noted that Site 19 is made up of four separate tank sites (Tanks 2, 14, 43, 53). Tank 14 is located on the west side of Moffett Field and is not included in this risk assessment. Tanks 2 and 43 are located adjacent to Hanger 3 (east side) and these two tank sites are evaluated together in the risk assessment. Tank 53 is located on the north end of Moffett Field and is evaluated in the risk assessment separately.

Reference:

PRC Environmental Management, Inc. 1992.
"Draft, Additional Tank and Sump Field Investigation Technical Memorandum," December 22, 1992.

PRC Environmental Management, Inc. 1991
"Tank and Sump Removal Summary Report," July 15, 1992.

U.S. EPA Remaining Comments on the Navy's
Draft Final OU 2 Baseline Risk Assessment

1. Page 20-48 and Table 20.3-10A: Chemical Specific Dermal Absorption Factor for Soils. Citing the Mckone and Wester et al. paper rather than presenting the rationale which was used to derive these numbers is not acceptable, since no EPA approved values exist for these factors. Please provide the rationale.

2. Section 20.6. Although it is referred to, the risk at background presented in the July 1992 Draft Baseline Risk Assessment is not included in the current version of the report. Calculation of the risk at background is essential to the baseline risk assessment due to the uncertainties associated with background levels. Additionally, the rationale for selection of background concentrations used in the risk assessment must be presented.

3. Appendix A is the source of the chemical concentration data used in the Baseline Risk Assessment. According to the Draft Final RI, changes have been made to Appendix A and, therfore, this material should be reviewed to ascertain what, if any, effect these data changes would have on the risk assessment.

4. Site 19 includes contamination from Tank 53. Data collected as a part of the "Draft Additional Tank and Sump Field Investigations Technical Memorandum," dated December 22, 1992, by PRC Environmental should be included in the Baseline Risk Assessment. Data from soil samples in that report included benzene, toluene, ethylbenzene, and xylenes (BTEXs) in significant quantities. Approximately 20 soil samples near Tank 53 had benzene concentrations above the estimated 29 ug/kg modeled as leaching into the groundwater at levels above the maximum contaminant level (MCL) Table 20.3-14.

INTERNATIONAL TECHNOLOGY CORPORATION

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Response to OU2 RI Baseline Risk Assessment Comments
NAS Moffett Field Remedial Investigation
Task Order K-04

Dear Paula:

Please find enclosed response to comments on the OU2 RI Baseline Risk Assessment. The comments were made by EPA on March 2, 1993. These comment responses are provided for your review. By copy of this letter, I am distributing these responses as noted.

If you have any questions regarding this correspondence or require additional information please call.

Sincerely yours,

R. Jeffrey Pile
Project Manager

RJP/rsg

Enclosures

cc: Lt. Susanne Openshaw, NAS Moffett Field
Stephen Chao, WESTDIV
Michael Gill, EPA
Elizabeth Adams, RWQCB
Cyrus Shabahari, DTSC
Fred Malloy, SAIC
Cindy Hassan, IT
Keith Bradley, IT