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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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December 14, 2001

TO: Internal File

THRU: Susan M. White, Senior Reclamation Specialist/Biologist & Team Lead

FROM: Priscilla W. Burton, Senior Reclamation Specialist/Soils

RE: Phase II Reclamation Appendix 14, PacifiCorp, Des Bee Dove Mine, C015/017-AM01D

**SUMMARY:**

Phase II reclamation will include the Deseret Mine portal pad/material storage (1.1 acres) Bathhouse pad (2.0 acres) and Tipple pads (3.4 acres), and the access road from the mine site to the cattle guard (4.5 acres). The area is pre-SMCRA. These plans supersede those in the currently approved MRP, Volume 2 for the salvage of substitute topsoil. Soils information from trenching of the site during the week of December 3, 2001 will be used to create the substitute topsoil salvage and redistribution plan.

**TECHNICAL ANAYLSIS:**

# GENERAL CONTENTS

## PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

**Analysis:**

Both Phase I and Phase II are being included as Appendix XIV of the Mining and Reclamation Plan, yet the Table of Contents has been created for each Phase of reclamation, not for the entire Appendix. A table of contents for the entire appendix is required. Also reference to the location of the information in the MRP Table of Contents in Volume 1 is required. Reference to the information in the Appendix should also be made in Volume 2, Part 4, Reclamation Plan portion of the MRP and Volume 4, Reclamation of the MRP

Cut and fill information provided in Appendix C of Section R645-500 was difficult to interpret and was not easily explained by the Permittee during a discussion session on December 18, 2001 at the Energy West office.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of the Permit Application Format and Contents section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-120**, The Permittee has chosen to append the MRP, rather than update the information within the MRP. The MRP must contain references to the newly created appendix in Volume 1 Table of Contents and in Volume 2, Part 4, Reclamation Plan and in Volume 4 Reclamation of the Mining and Reclamation Plan. Appendix XIV must have a Table of Contents covering both Phase I and Phase II.

**R645-301-121.200**, The Permittee must provide an explanation of how to interpret the cut and fill data provided in Appendix C in Section R645-500.

## REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

**Analysis:**

The Permittee has employed Dan Larsen of Environmental Industrial Services, a qualified soil scientist, to conduct the soils investigations as a basis of forming a reclamation salvage and replacement strategy. All technical data submitted in the permit application will be accompanied by the names of persons or organizations that collected the data.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of Reporting of Technical Data section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-130**, Information provided in Appendix XIV must include the name and affiliation of the soil scientist who collected the soils data.

# ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

## SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

**Analysis:**

Elevation is 7,630 feet on a southeast exposure and slopes of 1½ H:1V to 2H:1V. The plant community is Utah juniper and pinyon pine. Plants within this community include Salina wildrye, western wheatgrass, and Indian ricegrass.

Soils have been described in the MRP as either

- Typic Ustochrepts (50%) which are characterized by a 35 cm thick (13 inches) sandy loam surface layer with 25% coarse fragments. Underlying this layer is a stony loam layer 100 cm thick (39 inches) with up to 50% coarse fragments.

or

- Lithic Ustorthents (25%) which are characterized by rock within 50 cm or 19 inches.

Also present are small areas of Mollisols on the north and east facing slopes. In general, Mollisols are deep, well drained, with a well developed A horizon. See the General Soil Map of the Permit Area, Drawing #CE-10502-DS.

*Deseret Pad and Tipple Area Soils information*

Soil and Refuse sample sites are shown on Map 200-1. The following samples have been taken of the soils adjacent to the Deseret pad and represent undisturbed soil quality: SS8A, collected in 1990 and SS5 and SS10 collected in 2001. Laboratory Data Sheets for these sites are found in Appendix A. The 1990 soil samples were collected by Val Payne in April 1990 and analyzed by ACZ Laboratories in Steamboat Springs, CO. The 2001 samples were collected by Dennis Oakley and Chuck Semborski in March 1990 and analyzed by Inter-Mountain Laboratories in Sheridan, WY.

Sample depths were not reported for the 1990 samples and profile descriptions are not available. Information from the year 2001 indicates that samples were taken from 0 – 6 inches, 6 – 12 inches and 12 – 18 inches of the surface at each sample site. No field notes were taken and it is not known whether a lithic contact was encountered at eighteen inches.

The undisturbed soils of the Deseret Pad are represented by sample sites SS5, SS8A, and SS10 as shown on Map 200-1. Qualities of the undisturbed soils are summarized in the Deseret

Pad and Tipple Area Soils Information Summary table below. The Deseret pad soils in the location of SS10 were found to have much less sand (21%) than the other sites with texture bordering on clay loam (28% clay and 51% silt). As expected, this site had the highest saturation percentage.

Disturbed soils in the Deseret pad area are described by samples SS8 and SS9. The characteristics of these sites are also summarized in the Deseret Pad and Tipple Area Soils Information Summary table below.

Refuse quality is represented by sites SS6 and site 1117. Characteristics of the refuse are summarized in the Deseret Pad and Tipple Area Soils Information Summary table below. In some instances, the refuse is unsuitably high in pH, SAR, and EC. In most instances the refuse is too sandy for use in the top four feet of the reclaimed profile. Samples were taken of refuse/soil mixtures during trenching (December 3, 2001) and this combined mix may be more useful than straight refuse.

Deseret Pad and Tipple Area Soils Information Summary

| | Undisturbed (sites SS5, SS8A, SS10) | Disturbed (sites SS8 and SS9) | Refuse sites (sites SS6 and 1117) |
|---|---|---|---|
| PH | 7.2 – 7.6 | 7.0 – 7.3 | 7.0 – 10.0 |
| EC mmhos/cm | 0.32 – 0.63 | 0.55 – 3.0 | 2.1 – 13.3 |
| SAR | 0.5 – 0.6 | 0.81 – 1.76 | 8.5 – 9.1 |
| $NO_3$ – N ppm | 0.3 – 1.9 | 0.78 – 10.3` | 5.1 – 6.7 |
| P ppm | 2 | | 2.46 – 10.1 |
| NP (t/1000t) | 180 -350 | 314 - 421 | 275 |
| AP (t/1000t) | | 4 | 1.25 |
| Texture | sl, ls, l, cl | loam | Sandy loam |
| %clay | | | |
| %sand | 21 - 84 | 35 -55 | 73 |
| SP (%) | 27 - 34 | 31 - 35 | 26 |
| Coarse frag % | 25 - 40 | 19 - 43 | 29 – 34% |

*Bathhouse pad soils information*

Bathhouse pad soils are represented by sample sites SS2, SS4, #19, and #22 all taken in 2001. Site #19 is also known as DBD 3600, a composite taken from 0 – 18 inches, and site #22 is also known as DBD 3700, a composite taken from 0 – 5 feet. Undisturbed soils in the vicinity

of the bathhouse pad are represented by SS1, collected in 2000, and SS6A, collected in 1990. Laboratory Data Sheets for these sites are found in Appendix A. The 1990 soil sample was collected by Val Payne in 1990 and analyzed by ACZ Laboratories in Steamboat Springs, CO. The 2001 samples were collected by Dennis Oakley and Chuck Semborski and analyzed by Inter-Mountain Laboratories in Sheridan, WY.

Qualities of the pad soils and adjacent, undisturbed soils are summarized in the Bathhouse Pad Soils Information Summary table below. The most significant difference between the pad soils and undisturbed sites was the SAR, percent coarse fragments, and the Neutralization potential. Soils in the vicinity of site #20 or DBD3700 with high SAR can be avoided as a source of substitute topsoil.

Bathhouse Pad Soils Information Summary

| | Undisturbed (sites SS1 and SS6A) | Disturbed (sites SS2, SS4, #19 and #20) |
|---|---|---|
| PH | 7.2 – 7.4 | 7.0 – 7.4 |
| EC mmhos/cm | 0.71 – 3.1 | 0.96 – 2.4 |
| SAR | 0.3 – 0.96 | 0.47 – 11.7 |
| $NO_3$ – N ppm | 0.8 – 7.84 | 0.74 – 4.8 |
| P ppm | 2 – 3.28 | 1 – 2.48 |
| NP (t/1000t) | 277 -308 | 4.5 – 662 |
| AP (t/1000t) | 0 – 5.31 | 0 – 1.56 |
| TOC | (2.6%OM) 2.9 –3.6 | 1.5 – 5.9 |
| Texture | SL | L - SL |
| %clay | 9 – 16 | 12 – 20 |
| %sand | 54 - 63 | 40 - 64 |
| SP (%) | 27 - 30 | 23 - 29 |
| Coarse frag % | 29 | 24 - 40 |

*Main access road soils information*

Cut slope soils along the main access road are presented by samples SS3 (a 2001 sample) and SS5A (a 1990 sample). The qualities of the soil are shown in the table below entitled Main Access road Soils.

Main Access Road Soils Information Summary

| | Cut slope (sites SS3 and SS5A) |
|---|---|
| PH | 6.8 – 7.3 |
| EC mmhos/cm | 0.67 – 2.17 |
| SAR | 0.22 – 2.17 |
| $NO_3$ – N ppm | 0.1 – 1.4 |
| P ppm | 0.38 - 2 |
| NP (t/1000t) | 155 |
| AP (t/1000t) | 0 – 5.62 |
| TOC | (4.1%OM) 2.3 |
| Texture | SL to L |
| %clay | 14 – 16 |
| %sand | 46 - 57 |
| SP (%) | 29 - 30 |
| Coarse frag % | 14.8 – 34.5 |

A soil survey of the Des Bee Dove mine site by Dr. A.R. Southard, Soil Scientist, Utah State University is referred to in this amendment. When used in the application, all referenced materials will either be provided to the Division or be readily available to the Division (R645-301-122). Please provide to the Division a copy of the soil survey report for the Des Bee Dove Mine site by Dr. A.R. Southard.

**Findings:**

Information in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-122,** Please provide to the Division a copy of the soil survey report for the Des Bee Dove Mine site by Dr. A.R. Southard, as referenced in the submittal.

# OPERATION PLAN

## TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

**Analysis:**

*Deseret Portal Area*

Trenching of the soils during the week of December 3, 2001, as required by NOV 01-7-1-1, revealed that bedrock exists at a depth of about 5 feet below the surface in the pad area. Little suitable substitute topsoil exists in this area (see field report O:015017.dbd/COMPLIANCE/2001/FV12072001). The Permittee has submitted a plan for trenching of the site in an attempt to designate the most suitable fill as substitute topsoil. This plan must be updated with the results from the trenching investigation conducted in response to N.O.V. 01-7-1-1.

The Deseret Portal area is approximately 1.1 acres. Using existing fill, slopes will be created between 1.25h;1v to 2h:1v (section 240, page 12). During grading of this site an excess of 9, 275 cubic yards of soil will be generated. The excess will be used as fill on the main access road or stored on the bathhouse pad. The R, B, &G Engineering Inc, Slope Stability Report dated September 2001 (Section 500, Appendix D) indicates that slopes of 1.25h:1v will be rockfill slopes. Previous information received from the Permittee in Amendment AM01A-1, Phase I Reclamation, indicated that only isolated pockets of soil would be placed in rockfill slopes.

The Permittee does not indicate the volume of growth material that is needed for the Deseret Portal area, nor does the Permittee indicate the area to be covered by growth material. The Division understands that for stability requirements, all 2h:1v slopes will be composed of suitable growth material in the upper layers. The Division further understands that the rock fill slopes of 1.25h:1v will receive only pockets of soil distributed randomly. The question remaining is how much of the Deseret portal pad area is 1.25h:1v and how much is 2h:1v.

Maps 500-1 through 500-4 have been provided electronically on a CD disc attached to this submittal. Paper copies of all maps have also been supplied except for Map 500-4, Cross-sections. This diagram of cross sections should be redrawn with disturbed area boundaries placed on the cross sections. From these drawings, the Division can determine that on either side of the drainage for a distance of approximately 75 feet (150 feet wide) there will be level or flatter than 2h:1v slopes.

The cross sections are on 100 foot centers and there are three cross sections in the Deseret pad area (cross sections 16, 15, and 14), representing an area of 200 feet. Therefore, the Division concludes that 200 X 150 feet = 30,000 sq ft or approximately 0.67 acres. Covering this much area with four feet of adequate rooting material would require 4,500 cubic yards of material.

This plan specifically states that growth media segregated during the valley fill excavation project will be used as the final fill cover (section 240 Reclamation Plan, page 12). Since there was no growth material salvaged during the valley fill excavation project (see N.O.V. 01-7-1-1) the meaning of this statement is unclear.

Refuse from this area will be placed along the slopes of the Deseret pad and along the road leading up to the Beehive pad, where the coal seam is exposed. Volume of refuse should be guestimated based upon the recent trenching activity.

*Tipple Area*

Trenching of the soils during the week of December 3, 2001, as required by NOV 01-7-1-1, revealed that a source of substitute topsoil exists beneath the access road to the tipple area (see field report O:015017.dbd/COMPLIANCE/2001/FV12072001). The slopes on the north side of the tipple yard will be scraped clean of coal and bedrock will be exposed. No topsoil is needed on the north slope of the tipple yard. The area to be treated with topsoil and the volume available from the source of colluvial material located underneath the access road should be guestimated by the Permittee, based upon the trenching activity.

*Bathhouse Pad Area*

Trenching of the soils during the week of December 3, 2001, required by NOV 01-7-1-1, exposed undisturbed ground underneath the pad at a depth of about five feet, not bedrock as described earlier in field report dated December 17, 2001.[1] The trenches also revealed that a source of substitute topsoil exists within the bathhouse pad outslope and fill (see field report O:015017.dbd/COMPLIANCE/2001/FV12072001)

*Main access road*

Trenching of the soils during the week of December 3, 2001, required by NOV 01-7-1-1, revealed that there may be a source of substitute topsoil buried in the main access road (see field report O:015017.dbd/COMPLIANCE/2001/FV12072001).

The submittal should utilize the information gained from trenching during the week of December 3, 2001 to provide the Division with information on volumes of waste, volumes of potential substitute topsoil, locations of substitute topsoil, designated mine waste burial locations.

[1] Discussion between Priscilla Burton and Chuck Semborski on December 18, 2001 at the Energy West offices.

**Findings:**

Information provided in the proposed amendment is not adequate to meet the Operations Topsoil and Subsoil requirements of the Regulations. Prior to approval, the Permittee must provide current information in accordance with:

**R645-301-233 and R645-301-121.100,** Incorporate the response to AM01C (NOV 01-7-1-1 Abatement information) into the submittal and supply the soils information gathered (field notes and laboratory analysis as well as consultants analysis of the information) from the abatement plan into the submittal. Utilize this information to provide information on volumes of waste, volumes of potential substitute topsoil, locations of substitute topsoil, designated mine waste burial locations, designated topsoil placement locations, and depth of topsoil placement.

**R645-301-121.200**, Please explain the statement made on page 12 Section 240 that growth media segregated during the valley fill excavation project will be used as the final fill cover (section 240 Reclamation Plan, page 12). Since there was no growth material salvaged during the valley fill excavation project (see N.O.V. 01-7-1-1) the meaning of this statement is unclear.

## SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

**Analysis:**

**Coal mine waste**

Coal mine waste must be disposed of in a controlled manner. The application indicates that areas of minor coal spills will be removed and buried in the cuts of the access road and portal pad (Reclamation Plan, Engineering Section 542.730). Burial of the refuse that remains in the Tipple and Deseret pad outslope is not mentioned. Presumably this will form the bulk of the estimated 9,000 cu yds of excess fill that will be hauled to the Bathhouse pad for permanent burial.

A discussion between Division personnel*; Brian McClelland, Geologist with the U.S. Forest Service; Dennis Oakley and Chuck Semborski of Energy West Mining Co. took place at Energy West offices on December 18, 2001. During this meeting Division personnel inquired as

* Priscilla Burton, Pete Hess, Dana Dean, Susan White, Pam Grubaugh Littig, Jim Smith

to the following:

- Recalculation of the volume of refuse to be moved and buried as a result of the trenching operation.
- Calculation of the volume of material to be excavated from the bathhouse pad to be used as cover or fill.

Clean up of all coal waste is the second reclamation procedure to occur as described by Table 1 of Section 500, Engineering. The Division assumes that this process will be ongoing as the reclamation of the Deseret pad and the Tipple yard proceeds and pockets of waste and less desirable material are unearthed.

**Findings:**

Information provided in the proposed amendment is not adequate to meet the Operations Topsoil and Subsoil requirements of the Regulations. Prior to approval, the Permittee must include statements that are consistent with the following Regulations:

**R645-301-553.252**, All coal mine waste must be covered with four feet of non acid/ non toxic material.

**R645-301-731.311**, Identify burial locations of all acid/toxic forming materials.

**R645-301-542.730**, Provide the calculated volume of the waste to be backfilled and buried in the fill as well as the volume of fill required to cover the waste (R645-301-553.252 and 553.300).

# RECLAMATION PLAN

## BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

**Analysis:**

**General**

A discussion between Division personnel*; Brian McClelland, Geologist with the U.S. Forest Service; Dennis Oakley and Chuck Semborski of Energy West Mining Co. took place at Energy West offices on December 18, 2001. During this meeting the Division inquired about the fill sources that would be used to fill the drainage in the re-mined section of the "valley fill." Fill sources such as the abutment at cross-section 1+00 and material under the access road at the location of the last trench were suggested by Mr. Semborski. The total volume of fill required to raise the level of the drainage was not readily known, although the cross sections of Sheet 500-1 show that thirty feet of fill is required at cross-section 3+00, twenty-eight feet of fill is required at 6+00 and fifteen feet of fill at 7+00. Sources were not evident in Appendix C of Section R645-301-500 or on the cross-sections of Drawing 500-4.

Division personnel also inquired as to the:

- The location of slopes that would be steeper than 2h:1v, as these steeper slopes will not receive topsoil treatments.

Points made by Energy West Mining Co. during the meeting of December 18, 2001 included the following:

- Vegetation monitoring would drive soil placement on the slopes steeper than 2h:1v.
- Energy West Mining Co. was incorporating all information from the Appendices of the submittal into the Mining and Reclamation Plan and operate according to the recommendations made therein.
- A Geotechnical Engineer from Rollins, Gunnel and Brown (RG&B) would be evaluating the soil material on site and according to the specifications of the material, the slopes might be created steeper than 1.5h:1v. ( i.e. The 1.2 H / 1V slope in cross section 10+00 of Plate 500-4 is a final cut slope configuration.)
- The contractor may utilize a grizzly to sort rock material or import rock material that fits the specifications for stability purposes.
- Cuts can be made in undisturbed ground that are steeper than the fill slope requirements for stability.

**Finding:**

Information provided in the application is not considered adequate to meet the minimum Backfilling and Grading requirement of the regulations. Designation of slopes that are to be steeper than 22h:1v (rock fill) has been addressed by another reviewer as a deficiency listed under R645-301-542 and will not be repeated here. Prior to approval, the Permittee must provide the following in accordance with:

* Priscilla Burton, Pete Hess, Dana Dean, Susan White, Pam Grubaugh Littig, Jim Smith

**R645-310-535**, Determine the total volume of fill required to raise the level of the main drainage in the "Valley Fill" location and show sources of fill in Appendix C in Section R645-500 and on the cross-sections of Sheet 500-1 and 500-3 and 500-4.

## TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

**Analysis:**

Substitute topsoil will likely be found underneath the tipple access road and in the bathhouse pad and underneath the main access road. Plans for salvaging and utilizing this material should be presented based upon the information gained from trenching of the soils during the week of December 3, 2001, required by NOV 01-7-1-1 see the field report in O:015017.dbd/COMPLIANCE/2001/FV12072001.

**Findings:**

Information provided in the proposed amendment is not adequate to meet the Reclamation Plan Topsoil and Subsoil requirements of the Regulations. Prior to approval, the Permittee must include the following information in accordance with:

**R645-301-233**, Please provide information from the trenching activity conducted during the week of December 3, 2001 and utilize the information to present a coherent plan for substitute topsoil salvage and redistribution.

## HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

**Analysis:**

**Acid and toxic-forming materials**

The Division notes that the bathhouse pad materials represented by sample locations 18, 19, and 20 in Appendix A of Chapter 2 had acid/base potentials of greater than 320 Tons/1000 Tons of soil. The valley fill coal fines (most of which have been removed during remining) represented by samples #5, #8 and #9 in Appendix A of Chapter 2 was 87 to 92% sand, with a Total Organic Carbon content of 76 to 84% and Total Sulfur Acid Base Potential between 26 and 49 Tons/1000 Tons. A positive acid base potential calculation for the refuse, combined with overburden high in carbonates will not create a reclamation problem due to acidity. The water

holding capacity of the waste is more likely to be an issue. Further information will be forthcoming as the results of the trenching conducted during the week of December 3, 2001 are incorporated into this plan. Trenching will provide information on refuse remaining at the site after remining.

**Findings:**

Information provided in the proposed amendment is not adequate to meet the Reclamation Hydrology requirements of the Regulations. Prior to approval, the Permittee must include the following information in accordance with:

**R645-301-731.311**, Incorporate the results of the trenching soil sampling conducted during the week of December 3, 2001 to ascertain the chemical qualities of the material remaining on site and to identify potential acid/toxic forming materials requiring burial.

## STABILIZATION OF SURFACE AREAS

**Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.**

**Analysis:**

Erosion control will be by extreme gouging (Section 553.100, page 17) and rock placement (Section 553.110). The Permittee is having soil samples tested for very fine sand and other parameters with which to calculate the K-factor of the soils on the surface of the slopes.

**Findings:**

Information provided in the proposed amendment is not adequate to meet the Reclamation Stabilization of Surface Areas requirements of the Regulations. Prior to approval, the Permittee must include the following information in accordance with:

**R645-301-244**, Please utilize information from the trenching activity conducted during the week of December 3, 2001 to calculate the K-factors for soils on the surface of the slopes.

## RECOMENDATIONS:

Energy West should utilize the information gained from trenching during the week of December 3, 2001 to provide the Division with information on volumes of waste, volumes of potential substitute topsoil, locations of substitute topsoil, designated mine waste burial locations. Such information should be incorporated into this amendment. Presently, the amendment is not adequate for approval.

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