

## Appendix P

### Control Option 44

#### EAC Area Flash Controls

<b>Control Options Analysis for Rocky Mountain National Park Initiative</b>												
<i>Proposed Implementation of Additional Condensate Tank Flash Controls in EAC Area</i>												
<b>Purpose</b>												
<p><b>Purpose:</b> This analysis presents the pros and cons of implementing further controls on flash emissions from condensate tanks within the ozone Early Action Compact (EAC) area (North Front Range Area). Production or "flash" emissions result when liquids under pressure are exposed to atmospheric pressure and the gases within the liquid volatilizes (e.g. opening a soda bottle). Flash emissions primarily occur at condensate storage tanks where light oils are separated from production water. Further control of flash emissions in Eastern Colorado are needed to maintain compliance with the ozone standard and could be used to further reduce emissions and make other strategies less necessary. The Division has proposed changes to Regulation 7 that would require emission controls on all EAC condensate tanks that exceed 11 tons per year on a projected uncontrolled basis (Attachement B - Initial Economic Impact Analysis of the Proposed Revisions to the Section XII of the "Emissions of Volatile Organic Compounds" Regulation). Assuming the proposed 11 tpy threshold is adopted under Regulation XII, this analysis considers the possible further lowering of the threshold to 6 tons per year.</p>												
<b>Cost/Benefit</b>												
<p><b>Costs:</b> Control of flash emissions from condensate tanks is accomplished through either thermal oxidation with a flare device or capture of the vapors with a vapor recovery unit (VRU). A flare device comes in several sizes depending on the number of condensate tanks manifolded together and the size of each tank. The total cost (capital &amp; installation) for an average flare device (30" diameter, rated at 1MMBTU) is about \$10,600.</p>												
<p><b>Benefits:</b> Based on the Division's analysis (Attachement B - Initial Economic Impact Analysis of the Proposed Revisions to the Section XII of the "Emissions of Volatile Organic Compounds" Regulation) establishing a proposed 6 tpy control threshold would result in an additional 30,913 tpy reduction in VOC emissions. Using the 2005 data currently available, establishing a 6 tpy threshold would require controls on an additional 2,314 tanks. Using the cost data discussed above the initial cost to control these tanks will be \$24,528,400. Using a 10% rate of return and a 15 year equipment life, the total cost will be \$102,686,785 over 15 years or \$6,845,786 per year for emission controls on condensate tanks. Dividing this number by the projected emission reductions of 30,913 tpy yields a cost per ton of VOCs reduced of \$221 per ton.</p>												
<b>Implementation</b>												
<p><b>Implementation:</b> Based on available information it does not appear that there are either any direct costs to the general public or additional implementation costs for the Division as a result of the proposed revisions.</p>												
<b>Viability</b>												
<p><b>Viability:</b> Reductions in ozone precursors (VOC) directly reduce the potential to form ozone. Particulates are not impacted by this proposal.</p>												

## Statewide Flash Controls

### Control Options Analysis for Rocky Mountain National Park Initiative

#### Proposed Implementation of Additional Condensate Tank Flash Controls Statewide

##### Purpose

**Purpose:** This analysis presents the pros and cons of implementing further controls on flash emissions from condensate tanks throughout Colorado outside of the ozone Early Action Compact (EAC) area. Production or "flash" emissions result when liquids under pressure are exposed to atmospheric pressure and the gases within the liquid volatilizes (e.g. opening a soda bottle). Flash emissions primarily occur at condensate storage tanks where light oils are separated from production water. The Division has proposed changes to Regulation 7 that would require emission controls on statewide (excluding EAC Area) condensate tanks that exceed 20 tons per year on a projected uncontrolled basis (Attachement B - Initial Economic Impact Analysis of the Proposed Revisions to the Section XVII of the "Emissions of Volatile Organic Compounds" Regulation). Assuming the proposed 20 tpy threshold is adopted under Regulation 7, this analysis considers the possible further lowering of the threshold to 10 tons per year.

##### Cost/Benefit

**Costs:** Control of flash emissions from condensate tanks is accomplished through either thermal oxidation with a flare device or capture of the vapors with a vapor recovery unit (VRU). A flare device comes in several sizes depending on the number of condensate tanks manifolded together and the size of each tank. The total cost (capital & installation) for an average flare device (30" diameter, rated at 1MMBTU) is about \$10,600. The total cost (capital & installation) for an average vapor recovery unit is about \$35,000.

**Benefits:** Based on the Division's analysis (below) establishing a proposed 10 tpy control threshold would result in an additional 1,457 tpy reduction in VOC emissions. Establishing a 10 tpy threshold would require controls on an additional 105 tanks. Using the cost data discussed above the initial cost to control these tanks will be \$1,113,000. Using a 10% rate of return and a 15 year equipment life, the total cost will be \$4,649,277 over 15 years or \$309,952 per year for emission controls on condensate tanks. Dividing this number by the projected emission reductions of 1,457 tpy yields a cost per ton of VOCs reduced of \$213 per ton.

##### Implementation

**Implementation:** Based on available information it does not appear that there are either any direct costs to the general public or additional implementation costs for the Division as a result of the proposed revisions.

##### Viability

**Viability:** Reductions in ozone precursors (VOC) directly reduce the potential to form ozone. Particulates are not impacted by this proposal.