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Emissions due to the natural gas storage well-casing blowout at Aliso Canyon/SS-25

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The pronounced increase in unconventional gas production in North America over the last fifteen years has intensified interest in understanding emissions and leaks in the supply chain from well pad to end use. Los Angeles, California is home 19 million consumers of natural gas in both industry and domestic end use. The well blowout at Aliso Canyon Natural Gas Storage Facility in the greater Los Angeles area was quantified using the tracer flux ratio method (TFR). Over 400 tracer plume transects were collected, each lasting 15-300 seconds, using instrumentation aboard a mobile platform on 25 days between December 21, 2015 and March 9, 2016. The leak rate from October 23rd to February 11th has been estimated here using a combination of this work (TFR) and the flight mass balance (FMB) data [Conley et al., 2016]. This estimate relies on the TFR data as the most specific SS-25 emission dataset. Scaling the FMB dataset, the leak rate is projected from Oct 23rd to December 21th. Adding up the emissions inferred and measured suggests a total leak burden of 86,022 $\pm$ 8,393 metric tons of methane. This work quantified the emissions during the "bottom kill" procedure which halted the primary emission leak. The ethane to methane enhancement ratio observed downwind of the leak site is consistent with the content of ethane in the natural gas at this site and provides definitive evidence that the methane emission rate quantified via tracer flux ratio is not due to a nearby landfill or other potential biogenic sources. Additionally, the TFR approach employed here is assessing only the leaks due to the SS-25 well blowout and excludes other possible emissions at the facility.