SOUTHWEST GAS CORPORATION

Jerome T. Schmitz, P.E., Vice President/Engineering

September 9, 2016

Kenneth Bruno
Program Manager
Gas Safety and Reliability Branch
Safety and Enforcement Division
California Public Utilities Commission
320 West 4th Street, Suite 500
Los Angeles, CA 90013

Subject: General Order 112 Inspection of Southwest Gas Corporation (SWG), South and North Lake Tahoe, and Truckee Districts 14, 15, and 16

Dear Mr. Bruno:

Southwest Gas Corporation (Southwest Gas or Company) respectfully submits the attached response to SED's summary letter for the General Order 112 inspection of Southwest Gas's South and North Lake Tahoe, and Truckee Districts, 14, 15, and 16, conducted June 13-17, 2016.

We appreciate Staff's consideration of this matter and look forward to discussing any questions or concerns that you may have.

Sincerely,

cc: D. Lee (CPUC)
C. Mazzeo (SWG)
E. Trombley (SWG)
K. Lang (SWG)
L. Brown (SWG)
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SUMMARY OF INSPECTION FINDINGS

A. Areas of Concern and Recommendations

1. In 2015, to address the lock up issues due to sulfur buildup, SWG implemented a pilot program to install six Welker F-19 pilot filters and monitor the results of these installations. Please provide SED with an update on this pilot program including implementation plans if the program proves to be effective in reducing sulfur buildup.

SWG Response:

Southwest Gas Corporation (Southwest Gas or Company) respectfully submits the following status report on the pilot program outlined in the July 24, 2015 preliminary report provided to SED. In 2015, Southwest Gas installed Welker F-19 filters on the six regulator stations listed in the table below. All six regulator stations are located in Truckee and the Northern California area of Lake Tahoe and were chosen because they previously experienced issues with sulfur build-up.

No	Facility ID	Location Description	F-19 Installation date
1	14DR10001566	FAIRWAY DR/HWY 89	WR 2963682 on 04/17/2015
2	15DR10001573	GLENSHIRE DRS # 4	WR 2963691 on 04/28/2015
3	15DR10001575	WEST RIVER RD/HWY 267 DRS # 2	WR 2963693 on 06/24/2015
4	15DR10001576	WEST RIVER RD/HWY 89 DRS # 3	WR 2963694 on 04/23/2015
5	16DS10026140	NEW BLACK BART 35#	WR 2977184 on 06/02/2015
6	16DS10026141	NEW BLACK BART 60#	WR 2977185 on 06/25/2015

Maintenance was performed on each of the six regulator stations in accordance with the Southwest Gas *Operations Manual, Pressure Regulation Procedure Section 2,* twice since the F-19 filters were installed. Preliminary results are very encouraging with field technicians noting the absence of sulfur build-up on the pilot regulators. While the pilot filters have been shown to be effective in eliminating sulfur build-up on the pilot regulators, it should be noted that these filters only filter the gas streams to the pilot – and not the inline regulator. In some cases, sulfur deposits have been discovered on the inline regulator boots. The threat of sulfur build-up on the regulator boots is currently mitigated through additional regulator station inspections.

Southwest Gas is in the process of developing its implementation plan to monitor and mitigate sulfur concerns. A copy of this implementation plan will be provided to SED by March 31, 2017.

2. SED reviewed regulator station maintenance records and noted the set points for some stations were set right up to the maximum allowable operating pressure (MAOP). The stations had the working regulator pressure set to MAOP and the monitor regulator pressure

set to MAOP plus allowance. SED noted the following instances during maintenance where it was discovered that either the as-found flow pressure or lock-up pressure exceeded the MAOP plus allowance:

Station ID	Inspection Date	Downstream MAOP	MAOP plus allowance	Monitor AF	Monitor Lock-Up
15DR10001576	9/24/2015	60	66	66.7	67.9
15DS10026480	9/5/2013	60	66	65.9	68.7
15DS10026920	8/31/2013	60	66	64.6	66.6
15DR10001577	6/22/2013	60	66	65.7	66.6
15DR10001574	6/8/2013	60	66	65.3	66.5
14DS10031220	7/23/2015	43	49	47	50.4
14DS10031220	10/8/2013	43	49	48.4	51.1
14DR10001568	7/9/2013	43	49	47.7	49.8
15DR10001572	6/17/2016	60	66	64.09	67.2

By setting the monitor regulator pressure to MAOP plus allowance, the monitor regulator is not afforded any buildup pressure before it must reach complete lock-up. Furthermore, given that in the field a pressure buildup is likely before complete lock-up, SED noted the field technicians accounting for this buildup by adjusting the pressure slightly below (~1psig) the documented set points:

Station ID	Inspection Date	Set Point	AL Pressure
16DS10027120	6/15/2016	Monitor - 38	36.74
14DR10001566	6/16/2016	Worker - 42	41.50
14DR10001566	6/16/2016	Monitor - 47	46.40
14DR10001567	6/16/2016	Worker - 42	41.00
14DR10001567	6/16/2016	Monitor - 47	46.63
15DR10001572	6/17/2016	Worker - 60	57.02
15DR10001572	6/17/2016	Monitor - 66	63.00

SWG Response:

While Southwest Gas acknowledges SED's comment that, "by *setting the monitor regulator pressure to MAOP plus allowance, the monitor regulator is not afforded any buildup pressure before it must reach complete lock-up*," the Company clarifies that what is described above is not a Southwest Gas practice. Rather, the Southwest Gas *Operations Manual, Pressure Regulation Procedure Section 1.2,* requires the monitor regulator be set such that during lockup the pressure does not exceed Maximum Allowable Operating

Pressure (MAOP) plus allowance (allowable build-up). To achieve this condition, the pressure of the monitor regulator is set during flow conditions to a pressure below MAOP plus allowable build-up, such that during lockup MAOP plus allowable build-up is not exceeded. This pressure is documented as the "as left" pressure on the regulator station inspection form. Southwest Gas has reproduced SED's table below, and appended it to include the "as left" flow and lockup pressures for the referenced station inspections. In all cases, the documented "as left" flow and lockup pressures are below MAOP plus allowable build-up, consistent with the Company's procedures and 49 CFR Part 192.

Regarding the "as found" (AF) flow and lockup pressures listed in SED's table which exceed MAOP plus allowable build-up during the annual inspection, Southwest Gas notes that this condition can arise due to a number of environmental or other operational factors. As such, 49 CFR §192.739, requires operators to inspect and test each pressure regulation station at intervals not exceeding 15 months, but at least once each calendar year. The inspection and test must include, but is not limited to, setting the correct station pressure consistent with the pressure limits of 49 CFR §192.201(a). The required inspections for the stations included in SED's table were completed within the prescribed intervals.

Station ID	Inspection Date	Downstream MAOP	MAOP plus allowance	Monitor AF	Monitor Lock-Up	Monitor As Left Flow	Monitor As Left Lock-Up
15DR10001576	9/24/2015	60	66	66.7	67.9	64.0	65.5
15DS10026480	9/5/2013	60	66	65.9	68.7	62.0	63.0
15DS10026920	8/31/2013	60	66	64.6	66.6	62.0	63.1
15DR10001577	6/22/2013	60	66	65.7	66.6	63.6	64.7
15DR10001574	6/8/2013	60	66	65.3	66.5	63.0	64.8
14DS10031220	7/23/2015	43	49	47	50.4	47.0	47.8
14DS10031220	10/8/2013	43	49	48.4	51.1	47.0	48.71
14DR10001568	7/9/2013	43	49	47.7	49.8	46.0	48.5
15DR10001572	6/17/2016	60	66	64.09	67.2	63.0	64.38

For the regulator stations listed in SED's second table, "Set Point" and "As Left" pressures are included for both worker and monitor regulators. While SED notes the field technicians accounted for build-up by adjusting the pressure slightly below (~1psig) the documented set points, this is not the case. As noted above, the flow pressure for the monitor is set to a pressure below MAOP plus allowable build up, such that during lockup MAOP plus allowable build-up is not exceeded, and documented as the "as left" pressure. In the case of the worker regulator, the flow pressure is set as a function of Maximum Operating Pressure (MOP), but not more than the MAOP, and documented as the "as left" pressure. For both worker and monitor regulators the "as left" pressure may not exceed the "set point," which is the maximum set point. Lastly, the Southwest Gas *Operations Manual, Pressure Regulation Procedure Section 2.1.1.,* requires the technician verify that all

pressure control devices have their set points displayed on or near the device to indicate their respective maximum set points.

3. During field verification, SED noted valve KB-0.28-A in King's Beach (Facility ID 14DVE0002141) as being hard to turn. Please provide SED with an update on the condition of the valve during the next maintenance cycle and if any actions are necessary to address the operability of this valve.

SWG Response:

On July 20, 2016, Northern Nevada Division personnel performed the annual maintenance on Valve KB-0.28-A located in Kings Beach. During the maintenance cycle, the field technicians lubricated and operated the valve without issue. Upon completion of the maintenance, the valve could be operated by the technician without assistance.