

**CALIFORNIA NATURAL GAS STORAGE FACILITIES:  
A CONTEMPORARY HISTORY OF INCIDENTS**

**SACRAMENTO NATURAL GAS STORAGE CPCN A. 07-04-013**

Prepared for:

Sacramento Natural Gas Storage, LLC

by:

Robert K. Weatherwax  
Michael R. Weatherwax

**August 8, 2007**



## TABLE OF CONTENTS

I.	<u>Introduction and Scope</u> .....	1
A.	<u>Introduction</u> .....	1
B.	<u>Scope</u> .....	1
C.	<u>Sacramento Natural Gas Storage Project and Overall California Context</u> .....	2
II.	<u>Natural Gas Storage Facilities in California</u> .....	4
A.	<u>Summary of Currently Active Natural Gas Storage Facilities</u> .....	5
B.	<u>Retired and Reactivated Natural Gas Storage Facilities</u> .....	5
1.	<u>Kirby Hills nee Dow NGSF</u> .....	5
2.	<u>West Montebello NGSF</u> .....	6
3.	<u>East Whittier NGSF Retirement</u> .....	6
III.	<u>Accidents and Incidents in California NGSF</u> .....	7
A.	<u>Summary of Accidents and Incidents</u> .....	7
B.	<u>Incident/Accident Descriptions</u> .....	8
1.	<u>McDonald Island 1974</u> .....	8
2.	<u>Aliso Canyon 1976</u> .....	8
3.	<u>McDonald Island 1993</u> .....	9
4.	<u>Aliso Canyon 1994</u> .....	10
5.	<u>Wild Goose 1999</u> .....	10
6.	<u>Playa del Rey 2003</u> .....	11
C.	<u>Other Issues and Considerations</u> .....	11
1.	<u>Playa Vista and Leaking Natural Gas</u> .....	11
2.	<u>Montebello Gas Leakage of the Early 1980s</u> .....	12
3.	<u>McDonald Island Flooding of 1982</u> .....	13



## I. Introduction and Scope

### A. Introduction

In recent decades there have been twelve natural gas storage facilities (NGSF) in California with up to ten operating at any one time. These facilities utilize a depleted petroleum/natural gas reservoir, have dedicated injection and withdrawal wells, and feature similar gas processing and compression equipment and gas gathering and transmission pipelines. Their overall uneventfulness of operations has, no doubt, contributed to their lack of public notice or attention and to a paucity of readily available data regarding their operations with respect to untoward incidents. In contrast, their operations (*i.e.*, their working gas volumes at various points in time) are the subject of great continuing interest and speculation and, based upon data collected and reported weekly by the U.S. Department of Energy's Energy Information Administration (EIA) and the American Gas Association (AGA), help determine the price of natural gas.

The Sacramento Natural Gas Storage Project, LLC is applying for a Certificate of Public Necessity and Convenience (CPCN) from the California Public Utility Commission (CPUC), Application No. 07-04-013, to construct and operate a natural gas storage facility in the City and County of Sacramento (SNGS Project). Since the type of project being proposed is quite similar to those already operating in California, the project team considers that a compilation of the recent California operating history with similar projects is both informative and relevant to citizens and their political representatives interested in this project, and to the regulatory agencies evaluating the project application.

### B. Scope

Our period of examination extends from 1970 to the present. This 37 year period reflects the full extent of the computerized and publicly available data of natural gas distribution and transmission equipment incidents available from the U.S. Department of Transportation's Office of Pipeline Reliability and Safety. The data base consists of six data sets equally split into incidents associated with distribution and transmission facilities. The three distribution equipment incident data sets are split into the following three segments: January 1970 through mid-year 1984, mid-year 1984 through early 2004 and then early 2004 to date. The three gas transmission and gathering equipment incident data sets are split into the following three segments: 1970 through mid-year 1984, mid-year 1984 through early 2002 and then early 2002 to date. The segmentations correspond to the edition of the reporting form used. In January 1970, Form 7100.1 for distribution and Form 7100.2 for transmission and gas gathering were adopted for required reporting of incidents.<sup>1</sup> Both forms were

---

<sup>1</sup>U.S. Pipeline and Hazardous Materials Safety Administration, Research and Special Projects Administration, RASP F 7100.1 and RASP F 7100.2 (1/70).



revised in March 1984, the transmission and gas gathering form was revised again in January 2001 and the distribution form was again updated in March 2004. Both forms were yet again revised in December 2005 with incidents reported on these latest editions of the forms concatenated with earlier incident reporting in the latest data sets.

We mined these data bases for all incidents<sup>2</sup> that we could determine to be relevant with the caveat that in no cases are NGSF identified as such in the data. Unfortunately, we determined that these data bases are not complete with respect to incidents involving NGSF due to the very nature of these facilities. The wellhead portion of NGSF are not part of the pipeline system and some of the NGSF deal with oil production and storage events. Both of these areas are outside of scope of the OPR jurisdiction so reporting on those sorts of events was not required by 49 CFR<sup>3</sup> §§ 190 *et seq*. Generally in California, jurisdiction and regulation for all of the well and wellhead related facilities rests with the California Department of Oil, Gas and Geothermal Resources (DOGGR) and incidents falling within their purview were generally not reported to OPR until well into the 1990s. In addition, based upon close examination of the OPR data bases, other incidents were not reported as well to OPR. The CPUC confidential data base of incidents is restricted to those involving entities regulated by the CPUC, is quite difficult for an outside party to gain information about incidents with NGSF, and is only functional beginning in 1997; so, cannot be used for a longer duration examination.<sup>4</sup> The DOGGR data bases are kept at the District Level at varying levels of detail and sophistication and are not inclusive of all failures occurring above ground. Since NGSF have been located in four- five of the six different Divisions, the DOGGR data employed herein were gathered by visitation to the District 6 offices and phone conversations with engineers in other Districts.

These formal regulatory data bases were supplemented by conversations/discussions with Southern California Gas Company (SoCalGas) staff, Pacific Gas and Electric Company (PG&E) staff as well as staff of the several Divisions of the CPUC and, as previously mentioned, several districts of the DOGGR. Thus, this compilation is partially an oral history and in toto is not known or thought to exist anywhere else.

### C. Sacramento Natural Gas Storage Project and Overall California Context

It is important to realize why it is credible that the following incident data will reflect the complete absence of casualties and very modest total property damage over a period of nearly four decades and why the SNGS Project has the potential to have an even better safety record. All of the reservoirs in California are depleted reservoir projects; in contrast, about twenty percent of the gas storage in the country is now contained in salt cavern storage facilities. Actual data and theoretical

---

<sup>2</sup>Accidents as used in the vernacular are types of incidents but incidents per the OPR forms also include events that draw media attention without necessarily being tied to much if any injuries, monetary loss or even disruption of service.

<sup>3</sup>Code of Federal Regulations.

<sup>4</sup>Personal conversation RKW with Julian Ajello, CPUC Utility Safety and Reliability Branch on July 30, 2007.



considerations suggest that salt cavern storage facilities are more prone to larger accidents especially those caused by a single point failure.<sup>5</sup>

The reservoir to be employed in the SNGS Project is the Florin reservoir and is exclusively a natural gas reservoir. Some of the other NGSF in California and elsewhere use depleted petroleum reservoirs that in some cases even continue to produce crude oil while functioning as a gas storage project. As described *infra*, a couple of the California incidents were aggravated by the presence of crude oil on the storage site. Naturally, that will not be a consideration for the SNGS Project.

Finally, the experience gained in the operation of these facilities and similar projects in other regions over the decades has provided insight in how to better design and operate these units as well as causing regulatory ratcheting up of safety requirements all intended to further enhance safety of newly proposed NGSF such as the SNGS Project.

---

<sup>5</sup>Hopper, John M., *Gas Storage and Single Point Failure Risk*, Energy Markets, 2006.



## II. Natural Gas Storage Facilities in California

The following table lists the NGSF that have operated principally as storage facilities within California any time during the period from 1970 until the end of 2006. They exclude selected facilities in Kern county, DOGGR District 4, consisting of Elk Hills Gas Zone, Lost Hills Etchegoin Pool and Ten Sections Main Area where the Division staff have determined that these facilities are

*“Used only for intermittent gas production or injection. Not a true gas storage project.”<sup>6</sup>*

It should be noted that the Energy Information Administration (EIA) within the U.S. Department of Energy is not in full agreement with DOGGR in these classifications, particularly with respect to the Elk Hills field which they treat as an active NGSF.<sup>7</sup>

The total NGSF service period represented by these twelve projects beginning in 1970 is about 322 years of operation. As will be discussed *infra* this entire time frame has seen no deaths or injuries due to failures or other reportable incidents at these projects. A spotless system safety record for California built, operated and regulated projects.

### A. Summary of Currently Active Natural Gas Storage Facilities

There are currently ten NGSF operating in California with two retired. The ten include Kirby Hills which has been recently reactivated and treats Phases I and II of the Wild Goose development as one project. Six of the ten active projects are in depleted gas fields while the other four, all in southern California oil fields, are using depleted oil reservoirs. The total amount of working gas from the operational units is approximately 266,841 MMcf with a total deliverability of 6,670 MMcf/d. The largest as measured by working gas is PG&E’s McDonald Island field, while the highest peak deliverability is achievable from SoCalGas’ Aliso Canyon field. Two of the four oldest facilities, West Montebello and East Whittier, have been retired from active gas storage by SoCalGas.

It is noted that the three new fields (Wild Goose Phases I and II; Lodi; and Kirby Hills), have come within the last eight years following a greater than two decade hiatus in activation of new facilities that somewhat coincided with the “gas bubble” following enactment of the Natural Gas Policy Act in 1978. The new facilities also coincide with the final push by the various Air Quality Management Districts and the Air Resources Board to essentially eliminate the capability to employ low sulphur, waxy residual oil in case of shortage or curtailment of natural gas supply to the approximately 15,000 MW of large steam Rankine cycle plants spread along the entire California coast and intermediate valleys. As the California energy system is now constituted, NGSF are the crucial lynch pins of preserving the functioning electric system and, therefore, protecting the public welfare in times of restricted gas pipeline supplies.

---

<sup>6</sup>California Division of Oil and Gas, 68<sup>th</sup> Annual Report of the State Oil and Gas Supervisor, Report No. PR06, 1983.

<sup>7</sup>*E.g.*, EIA, Oil and Gas Field Code Master List Updates 1999, DOE/EIA-0370U(99), January 2000.



B. Retired and Reactivated Natural Gas Storage Facilities

Three facilities are listed on the table as either being fully retired or reactivated: Kirby Hills in Solana County and West Montebello and East Whittier in southeastern Los Angeles County. Even with fully retired fields such as East Whittier and West Montebello, recovery of cushion gas and any naturally recharged or facilitated crude oil recovery can continue for literally decades as is the experience for these two projects.

1. Kirby Hills nee Dow NGSF

The Kirby Hills NGSF uses the Domengine Pool first discovered by Shell Oil company in 1946 and produced for the subsequent 30 years. At that point Dow Chemical Company, the then current owner, turned it into a storage facility and operated it as such until the late 1990s (~23 years) at which time it was shutdown after recovery of all the economically recoverable gas.<sup>8</sup> The facility was reactivated in 2006 as the Kirby Hills project by the Lodi Gas Storage, LLC.

2. West Montebello NGSF

The Montebello petroleum field began producing crude oil with associated natural gas and liquified petroleum gases (LPG) in the 1920s. It encompassed three pools, including the West Montebello pool that was later converted to a NGSF that commenced operation in 1956. Consistent with all the incident records of which we are aware and per discussions with DOGGR and SoCalGas staff, we believe that it operated without significant incident until the early 1980s when releases of stored gas were detected within nearby residential areas built over and around abandoned oil wells associated with the West Montebello pool. Subsequent to this discovery, the decision was made by SoCalGas and sanctioned by the CPUC to terminate use of the facilities for economic considerations.<sup>9</sup> See *infra* for more details on the leakage issue and the circumstances that render this incident not relevant for consideration with respect to the Sacramento Natural Gas Project.

3. East Whittier NGSF Retirement

The East Whittier NGSF began operations in 1952 in an exhausted petroleum basin sometimes referred to as the La Habra pool. Its extremely small size made it a marginal player at all times with little utilization.<sup>10</sup> It ceased operations in 1985 as a storage facility due to economic considerations of two sorts. It was expensive to operate due to its diminutive size, especially by California

---

<sup>8</sup>Lodi Gas Storage Project, Permit Application with DOGGR, 2006.

<sup>9</sup>RKW, personal conversation with SoCalGas staff.

<sup>10</sup>*Op sit*, DOGGR 1983 plus 1974, 1977, 1982 and 1984.



standards, and due to loss of reservoir gas. It was discovered that either one or more existing wells drilled by another participant in the field, Union Oil, and/or one or more new well(s) drilled by Union were recovering SoCalGas injected gas.<sup>11</sup> Whether this was due to gas migration or “corner shooting” is unknown. The storage facility is currently in almost complete blow down stage with only one well still active.<sup>12</sup>

---

<sup>11</sup>RKW, personal conversation with Mike Kratovil, Environmental Unit Supervisor, DOGGR District 1, July 27, 2007.

<sup>12</sup>RKW, personal conversation with Bruce Hesson, DOGGR District 2 Deputy Engineer, July 26, 2007.



III. Accidents and Incidents in California NGSF

In this section we discuss the observed accident events that we have identified as having occurred in California NGSF since 1970, and we also discuss, for completeness, the unique issues surrounding three of the projects.

A. Summary of Accidents and Incidents

We have identified six incident events that have occurred over the last 37 years that are of sufficient severity to be considered reportable events. These are described in the accompanying table. It should be noted that there has not been even one injury, let alone any fatalities, during the more than three hundred years of relatively recent project operations. This is a truly enviable safety record that would make this industry a very attractive industrial activity even were its continued operations not absolutely essential to the economic well being and public welfare of the state.

CALIFORNIA NGSF INCIDENTS 1970 TO DATE							
<u>Incident Date</u>	<u>NGSF</u>	<u>Triggering Event</u>	<u>Injuries</u>		<u>Property</u>		<u>Sac. NGSF</u>
			<u>Gas Ignition</u>	<u>or Deaths</u>	<u>Damage (\$)</u>	<u>Multiple Failures</u>	
5/17/1974	McDonald Is.	Human Errors	Yes	None	5,000	Possibly	Yes
1/1/1976*	Aliso Canyon	Sand erosion	Yes	None	25,000	No	Mitigated
1983-1984	Montebello	Leaking oil wells	No	None	1,000,000+	Possibly	None
10/1/1993	McDonald Is.	Human error	Yes	None	2,000,000	Possibly	Yes
1/17/1994	Aliso Canyon	Northridge Earthquake	Yes	None	30,000,000	No	Partial
2/28/1999	Wild Goose	Leaky gasket	No	None	Small	No	Yes
4/20/2003	Playa del Rey	Corrosion in sensor	No	None	2,500,000	Yes	Partial

Sources indicated in writeups *infra*  
 \*Questionable date; could have been May 16, 1976



B. Incident/Accident Descriptions

1. McDonald Island 1974

*“A blowout and fire occurred at Whiskey Slough well 14W<sup>13</sup> in May 1974, during completion operations. A drill crew failed to keep the hole full of fluid and subsequently did not close the blowout preventers when fluid began to back flow. The DHSV’s (down hole safety valves) closed in the adjacent wells and prevented them from catching fire. Fire damage control prevented any major damage to the platform or well heads 75 feet away from the burning well.”<sup>14</sup>*

There were no casualties. Property damage was reported to be \$5,000<sup>15</sup> but it is difficult even in 1973 dollars to envision the cost of well replacement *et cetera* being so little.

Unless the technology has changed markedly in the last 34 years, this human error-initiated series of failure events seems potentially plausible though very unlikely in new facilities including the Sacramento NGSF.

2. Aliso Canyon 1976

During 1976 sand erosion in piping caused a heavy wall tee to rupture and blow out, resulting in a well fire<sup>16</sup> and temporary shutdown of operations in the local area of the well which was, fortunately, about 3/4 of a mile from the compressor station and capable of being isolated by header valving. The best information we can gather is that the well where the fire occurred was either Fernando Fee number 34, 35 or 36. Ignition source was supplied by spark energy from the static electricity generated by moving sand particles. Information on this event is limited in the federal database as we cannot identify uniquely an accident in the OPS data that matches the event. We can say, based upon oral history, that there were no casualties and that the damage to equipment was modest and may have been on the order of \$25,000.<sup>17</sup>

Improvements in equipment partially learned from this very accident make this type of failure much less likely now than at the time it happened. Heavy wall tees were replaced at Aliso Canyon and are now generally not used for curved pipe routing and in their stead “target tees” are employed. This

---

<sup>13</sup>McDonald Island being a rather large storage project has two sets of injection/withdrawal wells drilled nearby to continuing production platforms named Turner Cut and Whiskey Slough.

<sup>14</sup>PG&E, letter from Charlie Bond to DOGGR District 6 staff date February 2, 1993

<sup>15</sup>Report ID 19990082, OPR Transmission Incident Database 1970-1984.

<sup>16</sup>*Op sit*, PG&E letter.

<sup>17</sup>RKW, personal discussions with SoCalGas staff.



type of plumbing component has lead in a “dead end” linear section on the bend into which the sand granules impact and never “see” the pipe wall on a bend in the pipe run. Also now used are sand probes placed in the flow that erode in the presence of sand. The status of the probes is monitored and if sufficient sensor wear exists that triggers examination of the piping with ultrasonic equipment to measure wall thickness for erosion. Periodic inspection of the piping for sand erosion is also mandated. Finally, surface shutoff valves were then installed at the Aliso Canyon facility and are now required at all facilities to insure that, were there to be a blowout, it would be immediately contained and the gas shut-in.

In general, sand erosion can be an issue in either oil or gas wells so this concern could apply to Sacramento’s Florin field wells as well. However, since all of the safety devices discussed above would be incorporated into the project, the chances of a blowout from sand erosion during operations would be very much diminished even below the observed rate of one event in several hundred years of operations.

### 3. McDonald Island 1993

At approximately 2:00 AM on October 1, 1993 an explosion followed by a fire occurred at PG&E’s Turner Cut platform. It was reported to have occurred in a gas/water separator and may have been due to human error. There were no injuries or fatalities. Extensive structural damage was done to the gas storage collection equipment on the platform, which was described as “fried” by personnel on the scene. The total equipment losses were estimated to be \$2,000,000.<sup>18</sup>

An elaborated later explanation was that the accident was caused by an observation port being left off an in-line heater’s firebox followed by an unexplained loss of flame and accumulation of unburned gas that was then explosively ignited.<sup>19</sup> These results seem to support the interpretation that standard equipment and operations were involved with the accident so that such an accident could apply to the proposed Sacramento NGSF. If the later explanation is correct then the failure event required two independent failures to cause the accident thereby markedly reducing its likelihood of occurrence.

---

<sup>18</sup>Robert Reid, DOGGR District 6, memorandum to Ken Henderson, Chief Deputy, DOGGR regarding Explosion at McDonald Island dated October 1,1993.

<sup>19</sup>International Gas Consulting, Safety Record Study of Underground Gas Storage in Depleted Gas Reserves: A Safe Industry in the Past, Present and Future, Page 3, May 4, 2007.



4. Aliso Canyon 1994

Aliso Canyon NGSF was near the epicenter of the Northridge 6.7 magnitude earthquake when it hit in January 1993.<sup>20</sup> The facilities were forced out of operation and significant equipment damage and many piping ruptures resulted from the ground movement and shaking. It is reported that there was no resulting fire or explosion.<sup>21</sup> DOGGR records suggest that a tank filled with crude oil also being recovered from the facility was ruptured with the loss of 5,000 gallons of oil.<sup>22</sup> There were no injuries or deaths associated with the secondary effects from the earthquake-induced failures on the facility, although over 50 people are thought to have died in the earthquake. Total property damage to the NGSF is reported to be \$30 million.<sup>23</sup>

This severe environmentally-induced failure is only very weakly applicable to the Sacramento NGSF. Certainly damage to an oil tank is inapplicable since the Florin reservoir is exclusively a gas reservoir. Damage from a seismic event is possible but the magnitude of the quake beneath the NGSF is extremely unlikely to be as severe as observed at the Aliso Canyon project site. It has been estimated that to experience an 6.7 magnitude or greater earthquake in the Sacramento area is only possible from a ~9+ magnitude earthquake near the Mendocino shore - due to the interaction of the Pacific and North American plates with the remnants of the Juan de Fuca plate - a very improbable event during the lifetime of the facility.<sup>24</sup>

5. Wild Goose 1999

During or shortly after commencement of storage activities a leak developed at the Wild Goose NGSF on February 28, 1999. The leak occurred in the gathering system pipeline and did not result in a fire or explosion. The “*leak was detected occurring at an above ground mechanical joint through a gasket (weeping around Gasket)*”. The gasket was replaced with “*minimal damage and no fatalities or injuries*”.<sup>25</sup>

This type of event seems generally applicable to NGSF, including the proposed SNGS project.

---

<sup>20</sup>US Geological Service Open-File Report Number 96-263 , “Response to an Urban Earthquake: Northridge ‘94”, <http://pubs.usgs.gov/of/1996/ofr-96-0263/>.

<sup>21</sup>*Op sit*, International Gas Consulting, Page 3.

<sup>22</sup>DOGGR District No. 2 spills database at Aliso Canyon NGSF compiled for RKW on July 26, 2007.

<sup>23</sup>Report ID 19940101. OPR Distribution Incident Database 1984-2001.

<sup>24</sup>Hilton, Richard, Professor of Geology, Sierra College, 1995.

<sup>25</sup>Report ID 19990082, OPR Transmission Incident Database 1984-2001.



6. Playa del Rey 2003

On April 20, 2003 an auxiliary gas supply pipe failed, releasing natural gas and oil condensate that formed a very fine particulate cloud which enveloped on-site equipment and drifted off of the NGSF grounds damaging auto and house finishes. The failure was initiated at the compressor station when an underground emergency shutdown device sensing line shorted out due to corrosion. This triggered the emergency shutdown of the station. Unfortunately, one of the valves failed to close as it was designed to do; so, a flow continued and blew out through a vent resulting in the particulate cloud.<sup>26</sup>

There were no injuries or deaths but substantial expenses associated with the accident. Equipment damage totaled about \$105 thousand and almost \$2.4 million were incurred by SoCalGas in cleanup costs mostly in the nearby neighborhood.<sup>27</sup> This event also triggered a CPUC complaint still ongoing, see *infra*.

This failure seems to be partially relevant to the SNGS Project. Most of the cleanup costs were caused by the oil entrapped in the particulate cloud. This is not an accident that could occur at the Sacramento facility as long as the particulate cloud was composed exclusively of crude oil and LPG since the Sacramento field contains only natural gas. However, there is conjecture that the oil might have been partially composed of lubrication fluids which would be found on the proposed Sacramento site. Even were there some lubricating oil in the particulate cloud in such an accident, the compressor station siting is in an ideal location at the edge of the Sacramento Army Depot to minimize the damage due to any such failure. The probability of the corrosion triggering the accident could be minimized through careful maintenance but might not be ruled out unless the shutoff design for the compressor station is tolerant to that fault.

C. Other Issues and Considerations

1. Playa Vista and Leaking Natural Gas

For decades developers have been trying to redevelop the Playa Vista neighborhood in West Los Angeles into a integrated residential, commercial and retail space thereby upgrading the remnants of the Hughes aircraft plant that are currently found on the site. This development has been continuously opposed by some residents of the Westchester, Venice and other nearby communities on grounds of congestion and air pollution while some environmentalists have opposed the

---

<sup>26</sup> *Op sit*, RKW personal conversation with SoCalGas staff.

<sup>27</sup> *Op sit*: RKW, personal conversation with Julian Ajello, CPUC.



development due to its feared effects on the Balona Creek wetlands to the north of the proposed development.<sup>28</sup>

The project's western border on Lincoln Blvd is adjacent to the eastern edge of the Playa del Rey NGSF and opponents have seized upon fear that injected gas from the SoCalGas' Playa del Rey project escaping from the edge of the NGSF is contributing to the gas that all agree has been rising from the ground in the area for many years. This claim was crystalized in a 2001 study required by the LA City Council of the developer, that asserted the presence of a fault running along Lincoln Blvd just to the east of the Playa del Rey project and providing a path for gas to migrate from the NGSF to the planned Playa Vista development. The proponents of the project have disputed this interpretation of the source of the gas and testing of the gas seepage has led most observers to conclude that the trace elements found in the gas are consistent with indigenous gas perhaps from the Pico Sands formation that extend from 500 to 3000 feet below the surface. The LA City Council has consistently ruled in support of the developer though it has mandated relatively herculean requirements for diverting and venting methane seepage in new construction built in the area.

The 2003 accident at Playa del Rey triggered one of the opponents of the development, The Grassroots Coalition, to file several complaints with the CPUC over the operations of the NGSF. These complaints were consolidated into case G0005010 which has continued for several years. During this period the CPUC has had some gas testing done at the site and according to Mr. Zeller, the CPUC council assigned to this case, the results show the gas to be indigenous and not from the Playa del Rey facilities.<sup>29</sup>

Quite recently during July there was a settlement conference attended by the Grassroots Coalition and SoCalGas representatives and arbitrated by a CPUC Administrative Law Judge. It appears that settlement will be arrived at that mandates some increase in methane monitoring by SoCalGas, dismisses the complaint with prejudice and permits the Coalition to try to recover their costs as CPUC interveners.<sup>30</sup> Thus, the entire issue seems to be growing moot in West LA as Playa Vista development continues apace and appears irrelevant to the proposed SNGS Project.

## 2. Montebello Gas Leakage of the Early 1980s

Early in the 1980s pipeline gas was detected as coming from around some homes nearby or on top of old plugged and abandoned (P&A) oil wells that were drilled into the West Montebello field. The failure of these P&A wells was confirmed by SoCalGas representatives and tests showed that the gas being leaked came from the NGSF. Eventually, several pieces of property were purchased by SoCalGas and the old wells exposed and re-plugged. Concern over other older wells, of which

---

<sup>28</sup>Wikipedia - [http://en.wikipedia.org/wiki/Playa\\_Vista](http://en.wikipedia.org/wiki/Playa_Vista).

<sup>29</sup>*Op sit*, RKW personal conversation with Jason Zeller, CPUC attorney on July 27, 2007

<sup>30</sup>*Op sit*, RKW personal conversation with SoCalGas staff.



there were many in the area, was a driving force behind the decision to close the NGSF along with the ability of SoCalGas to operate without the withdrawal capability of the field.

These leaking oil wells were all of the approximately 1920s vintage and were plugged so long ago as to occur before DOGGR review or jurisdiction. Further, there is speculation that the actual well casings were removed from some of these old wells during World War II when there was a shortage of well pipe and a critical need for petroleum to run the nation's war machine and wartime economy. Removal of the casing increases the difficulty in adequately plugging a well. Thus, these P&A wells were of a bygone era and inherently unreliably plugged.<sup>31</sup>

The nature of these wells makes this incident of dubious applicability to the Sacramento proposed facility. The many fewer existing P&A wells in the Florin field were all drilled in the 1970s and plugged in the late 1980s to early 1990s under DOGGR supervision. The adequacy of their plugging is well documented within A.07-04-013 and accompanying Proponents' Environmental Assessment.

### 3. McDonald Island Flooding of 1982

At about 6:00 AM on August 23, 1982 the McDonald Island Levee failed resulting in a breach about 300 feet long that entirely flooded the island including the NGSF located there.<sup>32</sup> The breach was 90 per cent repaired by the end of September 1982, at which time pumping began to empty the brackish water. All the while the NGSF continued to operate without incident. The various storage facilities and equipment at McDonald Island were designed to operate under water and, in this real-world test of both the design and the construction, the project continued to operate as intended.<sup>33</sup>

This incident demonstrates how self-contained these NGSF can be without leakage or supervision even in the most severe of environments.

---

<sup>31</sup> *Op sit*, RKW personal conversation with SoCalGas staff.

<sup>32</sup> Associated Press, NY Times August 24, 1982.

<sup>33</sup> RKW, personal conversation with Ed Chen, PG&E Gas Engineer July 27, 2007.