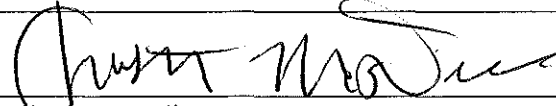


Region 6 Compliance Assurance and Enforcement Division

INSPECTION REPORT

Inspection Date(s):	August 14-16, 2018		
Media:	Air		
Regulatory Program(s)	Clean Air Act Section 112(r) and 40 C.F.R. Part 68 Chemical Accident Prevention Provisions (Risk Management Plan)		
Company Name:	Shell Oil Company		
Facility Name:	Shell Chemical Company LP		
Facility Physical Location:	7594 Highway 75		
(city, state, zip code)	Geismar, Louisiana 70734		
Mailing address:	7594 Highway 75		
(city, state, zip code)	Geismar, Louisiana 70734		
County/Parish:	Ascension		
Facility Contact:	Rhoman Hardy	General Manager	
	Rhoman.hardy@shell.com		
FRS Number:	110000743394		
Identification/Permit Number:	1000 0013 4419		
Media Number:	LDEQ AI#: 1136		
NAICS:	32511 (Petrochemical Manufacturing); 325199 (All Other Basic Organic Chemical Manufacturing)		
Personnel participating in inspection:			
Justin McDowell	EPA	Inspector	(214) 665-6557
Keri Meyers	LDEQ CAPP	Inspector	(225) 219-3101
Karley Vinson	LDEQ CAPP	Inspector	(225) 219-3024
Shamin Shukla	Shell Geismar	Process Safety Manager	(225) 201-6262
John Elmore	Shell Geismar	MOC & PHA Coordinator	(225) 201-6262
Kevin Poche	Shell Geismar	Environmental Manager	(225) 201-6262
Adam Millet	Shell Geismar	Process Engineer	(225) 201-6262
Brent Glidden	Shell Geismar	Emergency Response Coordinator	(225) 201-6262
Stephen Moonery	Shell Geismar	Learning Manager	(225) 201-6262
Jason Troxclair	Shell Geismar	E-Dept. Learning Advisor	(225) 201-6262
Jeremy Connell	Shell Geismar	MCO Learning Advisor	(225) 201-6262
Troy Dixon	Shell Geismar	AO Learning Advisor	(225) 201-6262
Paul Roussel	Shell Geismar	Logistics Learning Advisor	(225) 201-6262
Carr Thurman	Shell Geismar	PEI Engineering Lead	(225) 201-6262
Virgil Rayneri	Shell Geismar	PEI Manager	(225) 201-6262
Pam Mayers	Shell Geismar	PEI R&M Team Lead	(225) 201-6262
Adeyinke Adeleke	Shell Geismar	CME PEI	(225) 201-6262
Brandy Vazquez	Shell Geismar	PEI Inspector	(225) 201-6262
Kyle Devillier	Shell Geismar	Safety Instrumented Systems Focal Point	(225) 201-6262
Katy Conrad	Shell Geismar	Contracting & Procurement Manager	(225) 201-6262
Matt Lauve	Shell Geismar	Site Assurance Focal Point	(225) 201-6262
Earl Goris	Shell Geismar	Casual Learning/ LFI Coordinator	(225) 201-6262
Tye Legler	Shell Geismar	Sr. Technical Health and Safety Specialist	(225) 201-6262
Lori Lowery	Shell Geismar	Technology Manager	(225) 201-6262

EPA Lead Inspector Signature/Date		
	Justin McDowell	10/4/2018 Date
Supervisor Signature/Date		
	Samuel Tate	10/10/2018 Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

I, United States Environmental Protection Agency (EPA) Region 6 inspector Justin McDowell, and the Louisiana Department of Environmental Quality (LDEQ) Chemical Accident Prevention Program inspectors Keri Meyers and Kayley Vinson arrived at the Shell Chemical Company, LP – Geismar Plant (Shell Geismar) facility at 9:00 AM on Tuesday August 14, 2018, for an announced inspection. The LDEQ inspectors and I met with Shamin Shukla (Process Safety Manager), John Elmore (MOC & PHA Coordinator), Kevin Poche (Environmental Manager), Adam Millet (Process Engineer), and Brent Glidden (Emergency Response Coordinator) for an opening meeting. I presented my credentials and informed Shell Geismar personnel that this was an EPA inspection to determine compliance with the facility's Chemical Accident Prevention Program. The scope of the inspection was a partial compliance evaluation (PCE), which included an evaluation of the facility's compliance with the Clean Air Act (CAA) Section 112(r) and the Chemical Accident Prevention Provisions in 40 C.F.R. Part 68. Shell Geismar's Risk Management Plan (RMP) lists nine program level 3 processes. I inquired if an employee representative was available pursuant to section 112(r)(6)(L) of the CAA to participate in this inspection and was informed that Shell Geismar is a non-union facility.

Table 1: Opening Meeting Attendance, Tuesday August 14, 2018

NAME	POSITION
Justin McDowell	Inspector (EPA)
Karley Vinson	Inspector (LDEQ)
Shamin Shukin	Process Safety Manager (Shell Geismar)
John Elmore	MOC & PHA Coordinator (Shell Geismar)
Kevin Poche	Environmental Manager (Shell Geismar)
Adam Millet	Process Engineer (Shell Geismar)

FACILITY DESCRIPTION

The Shell Geismar Plant is located at 7594 Highway 75 in Geismar, Louisiana 70734 in Ascension Parish. "The primary feedstock of the facility is ethylene, which is transported via pipeline from other Shell facilities. The facility manufactures a wide range of ethylene based industrial chemical products and these products can be transported via tank trucks, standard or pressurized rail cars, marine tankers, and tank barges." The facility also manufactures detergents, a variety of alcohols and ethylene oxide. The facility operates a manned process 24 hour a day, 7 days per week and has approximately 650 full time employees.

Section II – OBSERVATIONS

On Wednesday August 15, 2018, LDEQ and I conducted a driving tour of the entire facility and were accompanied by Shell Geismar personnel to observe all process areas, the control rooms, tank farms, and the rail yards. We were shown the ongoing construction of the new A04 unit and ground flare. We visited the Utilities control room and had a demonstration from a board operator.

Subpart A – General

40 C.F.R. § 68.10 Applicability – Shell Geismar is the owner or operator of a stationary source that has more than a threshold quantity of regulated toxic and flammable substances, which are listed in 40 C.F.R. § 68.130, in a process and is subject to the Chemical Accident Prevention Provisions. Shell Geismar has a CAA Title V permit and several air operating permits for their Petrochemical Manufacturing and Other Basic Organic Chemical Manufacturing processes (NAICS codes 32511; 325199). Shell Geismar is subject to the Occupational Safety and Health Administration's (OSHA) process safety management standard, 29 C.F.R. § 1910.119, and has nine (9), Program Level 3 processes.

40 C.F.R. § 68.12 General requirements – Shell Geismar submitted a RMP re-submission for new regulated substance(s) listed by EPA (40 C.F.R. § 68.190 (b)(2)). This submittal listed nine covered processes containing both 40 C.F.R. § 68.130 regulated toxic and flammable chemicals. This requires the facility to develop and implement a management system, conduct a hazard assessment, implement the prevention requirements of 40 C.F.R. § 68.65 - § 68.87, develop and implement an emergency response program, and submit the data element from 40 C.F.R. § 68.175 in their RMP.

40 C.F.R. § 68.15 Management – Shell Geismar has developed a management system to oversee the implementation of the RMP elements.

Subpart B – Hazard Assessment

40 C.F.R. § 68.20 Applicability – Shell Geismar is a Program Level three (3) stationary source subject to this subpart. Shell Geismar is required to prepare an offsite consequence analysis and complete the five-year accident history.

40 C.F.R. § 68.22 Offsite Consequence Analysis Parameters – I reviewed and discussed Shell Geismar's offsite consequence analysis and supporting documentation. I discussed documentation with personnel to assure that all data was current and accurate due to the recent RMP submission updates. Shell Geismar's modeling scenarios were conducted using RMP*Comp™. It was documented that Shell Geismar changed their surrounding terrain type with their RMP update from urban terrain to rural. For the same scenario given, the distance to endpoint changed from 15.0 miles in 2015 to 18.0 miles in 2017 and 2018. Shell Geismar also uses the Missouri Census Data Center (MCDC) Circular Area Profiling System (CAPS) to estimate population and other receptors. Offsite consequence analysis data was completed by a third-party environmental management group.

40 C.F.R. § 68.25 Worse-case Release Scenario Analysis – Shell Geismar analyzed and reported in the RMP one worst-case scenario estimated to create the greatest distance to endpoint resulting from an

accidental release of a regulated toxic substance and one worst-case scenario estimated to create the greatest distance to an endpoint resulting from an accidental release of regulated flammable substances from covered processes under worst-case conditions.

40 C.F.R. § 68.28 Alternative Release Scenario Analysis – Shell Geismar identified and analyzed three alternative release scenarios for each regulated toxic substance held in a covered process(es) due to the impact of different receptors. Each scenario was given the greatest likelihood of occurrence or based on a previous occurrence (e.g. overfilling a railcar, leaving a ¾ bleed valve open while unloading a truck and a possible fusible plug failure). Shell Geismar listed one alternative release scenario for regulated flammable substances held in the covered process based on the greatest likelihood of failure of a loading hose connected to a railcar.

40 C.F.R. § 68.30 Defining Offsite Impacts - Population – Shell Geismar’s offsite consequence analysis documented the methodology for both worst-case and alternative release scenarios regarding possible affected population by using RMP*Comp™. The facility used the most current 2010 U.S. census data in conjunction with the CAPS from the MCDRC for the most updated population data. The population increased from 2015 to 2017 due to the facility changing their surrounding terrain type with their RMP update from urban terrain to rural.

40 C.F.R. § 68.33 Defining Offsite Impacts - Environment – Shell Geismar’s offsite consequence analysis documented the methodology for both worst-case and alternative release scenarios regarding possible affected receptors by using RMP*Comp™.

40 C.F.R. § 68.36 Review and Update – I reviewed Shell Geismar’s documentation that illustrates the offsite consequence analysis reviews and confirmed updates occur at least every five years.

40 C.F.R. § 68.39 Documentation – I reviewed documentation for offsite consequence analyses. For the worst-case and alternative case scenarios, a description of the vessel or pipeline, the substance selected as worst-case, and the rationale for selection was included; likewise, any assumptions included use of any administrative controls and any passive mitigation that were assumed to limit the quantity that could be released, estimated quantity released, release rate, and duration of release. The methodology used to determine distance to endpoint was documented by the facility using RMP*Comp™.

40 C.F.R. § 68.42 Five-year accident history – Shell Geismar did not report any accidental releases in their RMP that resulted in deaths, injuries, or property damage at the time of their last re-submission. The facility stated that any accidental release incidents that occurred did not meet the criteria for §68.42.

Subpart D – Program 3 Prevention Program

40 C.F.R. § 68.65 Process Safety Information – I reviewed Shell Geismar’s documentation for process safety information (PSI). Shell Geismar listed several procedures compiled to manage the various components of PSI. Shell Geismar uses a database called “AIM” to manage process safety information. Shell Geismar creates safety data sheets for their products and receive safety data sheets from suppliers. Safety data sheets are managed online and accessible to everyone. I was shown documentation regarding process chemistry, flow diagrams, maximum intended inventory data, consequences of deviation, and safe upper and lower limits for temperatures, pressures, flows, and

compositions. I also reviewed documentation and discussed, with Shell Geismar personnel materials of construction, electrical classification, relief system design and design basis, ventilation system design, design codes and standards employed, and safety systems.

40 C.F.R. § 68.67 Process hazard analysis (PHA) – I reviewed Shell Geismar’s procedure for conducting process hazard analyses. In each PHA conducted, Shell Geismar creates a PHA core team that consists of one qualified facilitator knowledgeable in Shell’s analysis technique, one operations operator with at least three years’ experience, and a degreed process engineer in the process assessed with a minimum of three years industry experience. I reviewed two (2) PHAs that both used the hazard and operability study (HAZOP) technology to conduct the PHAs. The two PHAs reviewed were for the AO1 unit and the EOEG-2 unit. I reviewed the system Shell Geismar has established to address the team’s findings and recommendations.

40 C.F.R. § 68.69 Operating Procedures – I reviewed Shell Geismar’s overview policy on operating procedures. I requested and reviewed operating procedures for operations related to process units. Operating procedures are maintained electronically and readily accessible to employees involved in their RMP process. These procedures included operating limits, safety and health considerations, safety systems and their functions, upper and lower operating limits and consequences of deviations. Shell Geismar’s annual operating procedure certifications for the “K-2 unit, K-3 unit, K-4 unit, K-5 unit, M-unit, OIU unit” were December 5, 2015, November 9, 2016, and December 7, 2017. Based on an annual (365-day) the last certification was 2 days late.

40 C.F.R. § 68.71 Training – I reviewed Shell Geismar’s training procedure and discussed it with personnel. Shell Geismar uses “Schedule Pro” to track training records. New employees enter a three-week initial training process where they are provided general site-specific information and are provided with a training plan. Each employee then continues on-the-job training over the course of the following three to seven months depending on the complexity of the job tasks. To complete certification, an operator must successfully demonstrate the jobs tasks as required. Operators are trained in various qualifications and must work three shifts every six months to maintain qualifications for a given job. During recertification, each employee is given a condensed training plan and must be competent to demonstrated tasks and review relevant training guides and operating procedures.

40 C.F.R. § 68.73 Mechanical Integrity (MI) – Shell Geismar described their MI program and displayed several procedures written to maintain the on-going integrity of the process equipment listed. Shell divides its Mechanical Integrity program into three departments: Pressure equipment, Mechanical equipment, and the Electrical engineering team. Shell sets frequency of inspection intervals based on American Petroleum Institute (API) and Risk Based inspection (RBI) guidelines. Shell uses Integrated Mechanical System (IMS) software as their web-based inspection management system. Shell has personnel dedicated to conduct and analyze corrosion studies on process equipment. While reviewing the documents, I observed that the frequency of inspection of process equipment had not been performed consistently with applicable manufacturers’ recommendations. Shell Geismar does biweekly query lists of upcoming inspections that are within up to 90 days of becoming due for inspection. Shell Geismar’s electronic systems identifies overdue inspections colored in red writing. When an overdue inspection query was run, there were several overdue inspections including RV-K2623, RV-S4068, and the process flare. Shell Geismar staff indicated that if an inspection is due, they will give inspectors an additional 15-30 days to complete inspections due to the risk being minor and negligible (e.g. Inspection due August 1, 2018 would be allowed to go through August 31, 2018).

40 C.F.R. § 68.75 Management of Change (MOC) – Shell Geismar displayed two documents used to manage changes to process chemicals, technology, equipment, procedures, and changes to stationary sources that affect a covered process. Shell has an MOC overview policy as well as an MOC process document. Shell described their MOC process changes as being either single or multi-discipline. Single discipline changes have a more condensed form mostly to document change-in-kind or metallurgy changes. I reviewed selected MOC forms to ensure that all considerations were addressed prior to any change including: the technical basis for the proposed change, the impact of the change on safety and health, modifications to operating procedures, necessary time for changes, and the authorization requirements for the proposed change. I reviewed MOCs to assure that if a change occurred, process safety information and operating procedures were updated accordingly. I also looked at when the procedures became applicable to employees, those that involved operating a process and/or maintenance, and when it applied to contract employees, whose job tasks would be affected by a change in the process, were informed and trained prior to start-up. It was shown on MOC forms that most training was completed the same day as startup and special provisions were made to ensure all operators were trained prior to startup.

40 C.F.R. § 68.77 Pre-startup Safety Review – I reviewed Shell's Pre-Startup Safety Review (PSSR) procedure to determine if/when the facility installs a new stationary source or significantly modifies an existing source that a review is implemented prior to the introduction of the newly regulated substance.

40 C.F.R. § 68.79 Compliance Audits – I reviewed Shell Geismar's two most recent compliance audits that were completed on April 25, 2013 and April 11, 2016. Shell Geismar determined and documented an appropriate response to audit findings and documented that deficiencies had been corrected. Shell Geismar uses a system called "RADAR" as a means of compliance findings tracking that is used globally by Shell. RADAR is used to track both Compliance audit and PHA items that have been entered into the system from 2010 to present and went live at the Geismar site in March 2018. Finding notes accompanied by action with due dates are entered into RADAR followed by an email notification to the action owner. As the target due date approaches, reminders are sent until the closed-out items have been documented with attachments to validate closure. This process can be followed up with a field verification if needed. Target dates are determined using a risk ranking system and require approval at the GM or Executive Vice President level for changes.

40 C.F.R. § 68.81 Incident Investigation – I requested a list of incident reports/ investigations for all incidents which resulted in, or could reasonably have resulted in, a catastrophic release of a regulated substance for the last five years pertaining to this subpart. While reviewing incident investigations from various incidents requested, not all incident investigations had findings and recommendations to be corrected, which included an incident with injuries. Shell Geismar failed to demonstrate that all incident investigation findings were reviewed with all affected personnel. Shell Geismar has a practice to share findings via email with team leads who are then responsible for informing other individuals whose jobs tasks are relevant to the incident.

40 C.F.R. § 68.83 Employee Participation – I reviewed Shell Geismar's developed, written plan of action, which described the implementation of employee participation required by this section, which met the requirements of this subpart.

40 C.F.R. § 68.85 Hot Work Permit – I reviewed Shell Geismar's procedure for conducting safe work/ hot work onsite. I discussed the types of hot work conducted at this facility. I requested and reviewed

selected hot work permits that had recently occurred at the facility. Permits are stored onsite for 13 months before being sent to a repository.

40 C.F.R. § 68.87 Contractors – Shell’s HSSE department provides risk rankings for all suppliers performing work at high, medium, or low risk depending on the complexity of the work. Medium and High-risk work must be confirmed thru Avetta. Each contractor previously selected is flagged with a color code of green (good), amber (ok), or red (did not pass pre-qualification). If a contractor is red, Shell will then search if it is feasible for another contractor to perform the work. If the contractor flagged as red will be used, it requires a variance for the contractor to provide a detailed description as to why they are red and a safety plan to remedy the issue. All contractors entering the site received technical expertise training prior to arriving at Shell. Shell HSSE provides the contractors with badge access, orientation, safe rules and zones, overview of past incidents, and site-specific training, in addition to the Safety Council/ OSHA site specific training. Shell Geismar has focal points to manage its contractor program. Shell Geismar failed to demonstrate that contractors coming onsite to perform work were informed of the known potential fire, explosion, or toxic release hazards related to the contractor’s work and the process. Shell Geismar sends contractors to the local Safety Council where they will receive both OSHA and site-specific training. Once approved by procurement they are given site-specific presentation training by Shell Geismar personnel. The presentation viewed did not fully inform of the known potential fire, explosion, or toxic release hazards related to the contractor’s work. Shell Geismar states that the final step is during the permitting process, when contractors are given checkoff of hazards of performing their work tasks. In addition, EPA or LDEQ inspectors were not informed of the known potential hazards once arriving at the site.

Subpart E – Emergency Response

40 C.F.R. § 68.90 Applicability – Shell Geismar’s employees are first responders that respond to both structural and chemical fires and releases onsite. Each of the approximately 130 firefighters receive a combination of fire school, HAZMAT training, in-plant training, physical readiness training, along with an annual medical evaluation. First responders attend training at Texas A&M University every three years and training at Louisiana State University annually, in between. The facility has approximately five Emergency medical technicians, one registered nurse, 80 medical first-aid certified and 45 rescue certified employees. Employee first responders are required to maintain annual refresher trainings.

40 C.F.R. § 68.95 Emergency Response Program – I reviewed Shell Geismar’s Emergency Response Plan and policies. Shell Geismar is an active participant in the CAER Mutual Aid, Ascension Parish LEPC, and the Industrial Mutual Aid Group (IMAG). Shell Geismar has a 3rd party contractor, who is responsible for the overall maintenance and documentation for inspections, testing, and maintenance of emergency response equipment.

Subpart G – Risk Management Plan

40 C.F.R. § 68.190 Updates – Shell Geismar’s RMP was re-submitted on June 26, 2018, as required by this subpart, for newly regulated substances listed by EPA (40 CFR 68.190(b)(2)).

40 C.F.R. § 68.195 Required corrections – Shell Geismar’s next RMP re-submission is due by June 26, 2023, unless an update or correction is required by 40 CFR § 68.190 and/or 40 CFR § 68.195.

Table 2: Closing Meeting Attendance, Thursday August 16, 2018

NAME	POSITION
Justin McDowell	Inspector (EPA)
Keri Meyers	Inspector (LDEQ)
Shamin Shukla	Process Safety Manager (Shell Geismar)
John Elmore	MOC & PHA Coordinator (Shell Geismar)
Lori Lowery	Technology Manager

Section III – AREAS OF CONCERN

AOC 1 – 40 C.F.R. § 68.69 (c) Operating Procedures

“(c) The operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practice, including changes that result from changes in process chemicals, technology, and equipment, and changes to stationary sources. The owner or operator shall certify annually that these operating procedures are current and accurate.”

Shell Geismar’s annual operating procedure certifications for the “K-2 unit, K-3 unit, K-4 unit, K-5 unit, M-unit, OIU unit” were December 5, 2015, November 9, 2016 and December 7, 2017. Based on an annual (365-day) the last certification was 2 days late.

AOC 2 – 40 C.F.R. § 68.73 (d)(3) Mechanical Integrity

“(d) *Inspection and testing.* (3) The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers’ recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience.”

While reviewing the documents, I observed that the frequency of inspection of process equipment had not been performed consistent with applicable manufacturers’ recommendations. Shell Geismar does biweekly query lists of upcoming inspections that are within and up to 90 days of becoming due for inspection. Shell Geismar’s electronic systems identifies overdue inspections colored in red writing. When an overdue inspection query was run, there were several overdue inspections including RV-K2623, RV-S4068 and the process flare. Shell Geismar staff indicated that if an inspection is due, they will give inspectors an additional 15-30 days to complete inspections due to the risk being minute and negligible (e.g. Inspection due August 1, 2018 would be allowed to go through August 31, 2018. The facility’s procedure: Pressure Equipment Inspection: Inspection Intervals for Fixed Equipment (File No: PEI-6.1) describes specific intervals for process equipment.

AOC 3 – 40 C.F.R. § 68.81 (e) Incident Investigation

“(e) The owner or operator shall establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions shall be documented.”

While reviewing incident investigations from various incidents requested, not all incident investigations had findings and recommendations to be corrected, which included an incident with injuries.

AOC 4 – 40 C.F.R. § 68.81 (f) Incident Investigation

“(f) The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable.”

Shell Geismar failed to demonstrate that all incident investigation findings were reviewed with all affected personnel. Shell Geismar has a practice to share findings via email with team leads who then are responsible for informing other individuals whose jobs tasks are relevant to the incident.

Section IV – FOLLOW UP

After the inspection, I requested documents reviewed onsite and was provided those documents following the closing meeting on August 16, 2018

Section V – LIST OF APPENDICES

N/A