INTERNATIONAL CYANIDE MANAGEMENT INSTITUTE

Cyanide Production

Summary Audit Report Form

PROQUIGEL

Candeias Operation 1st. Re Certification – Solid and Solution Sodium Cyanide

November 05-06, 2012

Name of Cyanide Production Operation: UNIGEL – UNIDADE CANDEIAS
Name of Operation Owner: PROQUIGEL QUÍMICA S/A (Branch)
Name of Operation Operator: PROQUIGEL QUÍMICA S/A
Name of Responsible Manager: Deiviti Caetano
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Location detail and description of operation:

Summary

The Unigel - Candeias Operation is located in the Camaçari Complex, State of Bahia, Brazil. It is part of the Salvador Metropolitan Region, and Camaçari is the metropolis' industrial city. Several chemical and petrochemical plants form one of the largest industrial complexes in Brazil, and the largest in the Northeast region of the country.

The sodium cyanide solution produced at Camaçari Operation is transported by road in ISO tanks to the Candeias Operation, where it is discharged and stored in the storage and feeding tank. Pumps keep the cyanide solution circulating.

Description of Operation

This unit produces solid cyanide, in powder or in brickets, and in a smaller scale, cyanide water solution, and technical degree.

The saturated sodium cyanide solution chemical degree is produced at the synthesis plant located in Proquigel Química S.A. head plant, in Camaçari, and transported to Candeias.

It is then continuously fed to an evaporator. After super-saturation it is then sent to a crystallizer. The evaporated water containing cyanide is condensed and sent to the effluents' internal treatment. The concentration and the crystal growth happen in the interior of the crystallizer. They are later on separated from the mother liquor by means of

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centrifugation. Then the humid crystals are transferred to a rotating dryer to be dried with hot air.

After that, the powdered NaCN can already be directly put in drums or be transformed in brickets, when passing through the compacting machine.

The unit purges are collected in a water solution tank and they are sold as cyanide solution technical degree, transported in iso tanks by road.

The present report describes the results of the first re-assessment of the ICMI.

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Auditor's finding

This Operation is

X in full compliance
in substantial compliance ***(see below)
not in compliance

with the International Cyanide Management Code.

"This Operation has experienced compliance problems during the previous three-year audit cycle which are discussed in this report under Standard(s) of Production Practice 2.2"

Audit Operation: UNIGEL – UNIDADE CANDEIAS

Audit Team Leader: Julio C. M. Monteiro

E-mail: jmaq@ig.com.br

Other Auditors: ----------

Date(s) of Audit: November 05-06, 2012

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Cyanide Production Operations and using standard and accepted practices for health, safety and environmental audits. This problem is discussed under Production Practice 2.2.

Signature of Lead Auditor :

Signature of Lead Auditor

1. OPERATIONS: Design, construct and operate cyanide production facilities to prevent release of cyanide.

Production Practice1.1: Design and construct cyanide production facilities consistent with sound, accepted engineering practices and quality control/quality assurance procedures.

The operation is
X in full compliance with
in substantial compliance with Production Practice 1.1
not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

After the 3-year cycle of the initial certification, there was evidence available that it was possible to ascertain the reliability of the structure due to the technical report issued by a civil engineer. The integrity and reliability of the pipes, as well, could be ascertained by means of a report issued by a mechanical engineer. All of the "as built" was done and all of the documentation specifying the construction materials used was updated. The plant is on schedule as to preventive and corrective maintenance. It has also introduced new process equipment, which have greater reliability and operational efficiency, as follows: a centrifuge, a heater and an air fluidized bed dryer.
The conceptual design was developed by the technology area in Proquigel, in partnership with equipment manufacturers, which are: Mausa (pusher centrifuge), SPX (air dryer) and Ray Burner (heater). Evidence of confirmation by means of: Cyanide Plant Conformity attested of compatibility of chemical materials. The following documents are to be analyzed: project specification, equipment drawings, equipment inspection and pipe line reports. It has been demonstrated that the Operation has a QA/QC program and that the construction and certification records are kept for the installation of the new equipment, observing all of the requirements defined in the program. All of the documentation with the equipment specification, datasheet, drawings, and material specification was presented and is appropriately filed in the Operation's Technical File department. The process is monitored by a Logic Control Process - LCP system and all tanks containing cyanide have level indicators and alarm levels, as the Auditor could see onsite. In operations with possible exposure to cyanide portable and fixed detectors are used. Procedure – Systems Critical to the Safety - maintained a 6-month-test for the interlocking system in the Sodium Cyanide Plant. Cyanide working areas and containments have its floors and walls built with reinforced concrete and must have no fissures or disruptions that can endanger the structure. This information was confirmed by means of the cyanide plant conformity attestation, as to the compatibility of chemical

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materials. Project specifications, equipment drawings and inspection of equipment and pipe line reports corroborate the conformity attested.

A logic control process monitors the cyanide process and storage vessels, in order to avoid overfilling. Besides, all tanks containing cyanide have level indicators and alarm levels, as the auditor could see on site. Personnel use portable and fixed detectors in operations with possible exposure to cyanide.

As to the materials applied and the size of containments for process and storage tanks, they have reinforced concrete in its floors and walls and are provided with thick waterproof painting. The calculation of containment capacity, issued on Nov/13/08, comes to the conclusion that the volume that can be held by containments is enough to handle the tanks.

Cyanide solution pipelines have an inspection program, and all cyanide pipeline flanges use a flange cover to avoid spills, which was seen on site by the auditor. Pipelines outside containments are lined with PVC, compatible with cyanide. Containments and pipelines are properly designed and equipped with materials to prevent leakage and spills.

Production Practice 1.2: Develop and implement plans and procedures to operate cyanide production facilities in a manner that prevents accidental releases.

The operation is
X in full compliance with
in substantial compliance with Production Practice 1.2
not in compliance with

Summarize the basis for this Finding/Deficiencies Identified: **(Due to the sensitivity of security issues regarding cyanide storage, no descriptions of substantial or non-compliance with this aspect of the Production Practice should be provided.)**
Revisions of procedures related to operation, contingency and changes in operating practices were checked and found in compliance with this Standard of Practice.

Operational Instruction “Unscheduled Shutdown of Operation U230 Cyanide” includes power failure, steam failure shortage of air for the instruments, shortage of natural gas and water, unblocking and cleaning of equipment.
There is a document for design modifications “Request for Project Modification” in which, among other evaluated items, the procedures for startup/ shutdown / normal operation are included in the record (checklist). There is a Maintenance Program for the entire Cyanide Plant. Within this program, the software ISCI - Integrated System for

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Continuous Improvement is used. Service orders are generated, informing the level of criticism of the equipment so that tasks are prioritized. Inspections are performed according to the plan, also included in the software, and the periodicity is based on Brazilian legislation “NR 13 Boiler and Pressure Vessel” and equipment that are considered critical by the Cyanide Code.

There is evidence of a procedure for the disposal of solid cyanide contaminated materials: “Decontamination and Disposal of Materials Containing Cyanide”. The practice adopted is that all of the contaminated material is contained in drums that are properly identified, temporarily sent to the industrial waste disposal area and then it is sent for the purpose of incineration to an Operation specialized in the treatment of solid residues. People who handle the contaminated material are duly instructed by means of formal training in classroom and practice in the field.

The instrumentation equipment is included in the maintenance plan and its calibration is properly executed in accordance with the manufacturer’s recommendations. There is a job instruction for locking mechanical valves that describes the interlocking of containment valves against discharges and also the criteria to open valves for sampling and analyzing product and further requesting the Lead Operator to discharge solution or water. In the process of renewing the approval of the boxes by the Brazilian Navy, the Approval Certificate is based on the Technical Report, and the tests were conducted by Hazmat Lab during Operation’s homologation.

Regarding plans and procedures describing standard practices for safe operation, there is a Certified Management System and operational procedures for the operation’s safe functioning and related training is provided. The selection of some operational procedures was done at random and their execution was followed onsite. Procedures are available in a system (software) called web desk, to which all Operators and maintenance personnel have access.

The warehouse in which cyanide is stored is covered, has complete ventilation. The solid cyanide is stored in big bags that are placed in plastic bags and then in wooden packs, and access is only allowed to authorized personnel.

In order to ensure that cyanide is appropriately packaged for shipment to end users, it has been requested and the Brazilian Navy has already renewed the approval of the boxes used, in the person of Frigate Captain Edmar Pochmann Magellan. Packaging process is thus Brazilian Navy ratified.

<u>Production Practice 1.3</u>: Inspect cyanide production facilities to ensure their integrity and prevent accidental releases.

X in full compliance with

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The operation is	in substantial compliance not in compliance	Production Practice 1.3

There is a technical report issued by a civil engineer regarding the structure and a report issued by a mechanical engineer concerning the integrity and reliability of pipes. All of the "as built" was done and all of the documentation was updated, specifying the construction materials used.

Summarize the basis for this Finding Identified:

The cyanide production Operation is inspected by Engineers registered with a reliable Regional Inspectors Cooperative (COOINSP).

Inspection frequencies comply with Brazilian legislation and are properly documented. There is an inspection plan for all plant equipment and software is inserted into SGE. There is formal procedure for equipment inspection and a specific department for the execution of inspections in the Operation. It has also been demonstrated that there are work instructions “Industrial Piping Inspection and Maintenance and Pressure Vessels Inspection and Maintenance”. All related inspection and control records are available on specific software (Maintenance Management System - MMS). Besides, all equipment has a file containing detailed information of the equipment and records on inspection and maintenance.

The plant is on schedule as to preventive and corrective maintenance. It has also introduced new process equipment with greater reliability and operational efficiency, as follows: centrifuge, heater and air fluidized bed dryer.

The conceptual design was developed by the technology area in Proquigel in partnership with equipment manufacturers, which are: Mausa (pusher centrifuge), SPX (air dryer), and Ray Burner (heater).

Mechanical: There is an appraisal report "Certificate of Compliance", signed under technical responsibility and stating that equipments are able to operate safely as long as they are kept under current design conditions.

2. WORKER SAFETY: Protect workers’ health and safety from exposure to cyanide.

<u>Production Practice 2.1</u>: Develop and implement procedures to protect plant personnel from exposure to cyanide.

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The operation is	X in full compliance with in substantial compliance with not in compliance with	Production Practice 2.1

Summarize the basis for this Finding Identified:

The Operation developed procedures, documents and records to minimize worker exposure through the implementation of several procedures and personal training.

Presentation of tests with operators in: position of masks, negative and positive tests, saccharine utilization, seal tests in the masks. Some of the services with a permit can be observed in the field. The work permits and the practices adopted were audited while work fronts were carried out, and conformity could be observed as well. It was also observed that workers who perform maintenance tasks in the Operation use protective personal equipment and personal alarms as well (ALTAIR-PRO) for the detection of eventual emissions.

Target schedules and the implementation of preventive and corrective actions are observed both during non-routine and emergency situations. Interviews with operators show they have knowledge on several non-routine emergency operations.

There is evidence that there are specific safety and maintenance procedures to be applied when needed for equipment and general maintenance in the area.

It is to be noticed that all maintenance services are only authorized after a work permit is issued (document used for risk analysis of a certain task).

The procedure for planning inspections and maintenance establishes technical and management criteria for its systematic application as a tool. It is meant to avoid problems with the installations and the environment, in accordance with legal and technical requirements and the good practices of industrial safety.

The “Request of Project Modification” checks the criteria that ensure formal analysis to be carried out prior to the implementation of new projects or temporary interventions, in accordance with the security code in the process of responsible action.

It is possible to notice that the Operation requests and considers worker input in the development and evaluation of health and safety procedures.

The Metrological Confirmation Plan of Critical Instruments is used in the management of calibration controls in order to ensure the exact measures so to limit worker exposure. The document contains evidence of instruments related to the Cyanide Code and to the Environment, Safety and Health area.

The Operation identified areas and activities where workers may be exposed to hydrogen cyanide gas and sodium, calcium or potassium cyanide dust at more than 4.7 parts per million (5 mg/m3) or less, as cyanide, and require the use of personal protective equipment as necessary. The document “ERPP – Environmental Risks Prevention Program establishes the risks to which workers may be exposed. The Operation has the Code for Cyanide Production which provides systems designed to

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ensure there is a method to help in the notification or communication when needed, in order to get help or assistance. There is a Change Management Policy, which describes the process steps, and the functions/responsibilities included in each project and each change process in the Operation. The PMSHC – "Program of Medical Safety and Health Control" is a document that determines the, introduced, periodical and final work in the specific tasks work is involved, during all of the employee's life in the Operation. There is a procedure that determines the characteristics of employees, contractors and visitors in areas with potential for clothing cyanide contamination. There is evidence that workers are advised that cyanide is present and that if necessary suitable personal protective equipment must be worn. This is a very strong point in the Operation. In the areas where there is potential for cyanide contamination, there are signs informing people that eating, smoking and drinking are not allowed.
As to cyanide monitoring equipment, instruments are managed in accordance with calibration controls, so that measures are as accurate as possible for limited worker exposure. Related evidence is found in SOC. I.02 R.01 Preventive Inspection Equipment Occupational Health, Rev. 1 - dated Sep/15/2011.

<u>Production Practice 2.2</u>: Develop and implement plans and procedures for rapid and effective response to cyanide exposure.

The operation is
- X in full compliance with
- in substantial compliance with Production Practice 2.2
- not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

There is evidence that the "Emergency and Response Plan for the Cyanide Plant" and the "General Plan of Emergency Response " were developed and implemented.
There is evidence of the Emergency Response Plan for dangerous products. Concórdia Transportes is the company responsible for the transport of Proquigel products to its clients. This document was prepared by SUATRANS/ COTEC – Consultoria e Tecnologia Ecológica. (www.soscotec.com.br).
The "Safety System for the Cyanide Plant" shows the safety equipment in the operation area.
There is evidence that there is water, oxygen, a resuscitator, antidote, freezers, stretchers, and a means of communication or emergency notification readily available for use in the plant. The "Plant System for Cyanide Security" shows security equipment in the area. There is evidence that there is first aid equipment. It is possible to inspect the ambulance, medical devices and kits of antidotes by means of checklists. The material safety data sheets and first aid procedures, including informational materials on cyanide safety, written

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in the language of the workforce, is available to workers. While visiting the installations the auditor could verify that all of the information on where cyanide is handled can be found at strategic points. The storage tanks, process tanks, containers and piping containing cyanide are identified in order to alert workers of their contents. The direction of the cyanide flow is identified in the pipes designated. During interview, the auditor learned that each employee gets seven sets of trousers and shirts, which ensures there will always be sanitized sets available for use. It is important to point out that in operations where dripping is possible, special protective clothes are used and they are disposed of for incineration.

There is a procedure used to determine the characteristics of employees, contractors and visitors in areas with a potential for cyanide contamination of clothing.

There is evidence that mock emergency drills are conducted periodically in order to test response procedures for various exposure scenarios, and lessons learned from the drills are incorporated to the response planning. These emergency drills are in accordance with the procedures.

Based on the accident that occurred on Dec/29/2011, the Operation conducted formal investigation with the objective of collecting detailed information on what happened. The accident led to the choice of the type of safety glasses to be used, which are wide vision goggles fully sealed. Employees suffered no consequences and the Operation trained all involved. The operating procedure was revised and personnel training provided. It was important to learn that any activity carried out in the cyanide Operation must have the highest level of protection. Another important aspect is to have mitigating eyewash in the Operation and to have a medical team prepared to respond in case of an emergency event. All of this was reviewed and accepted by the Auditor.

There is an inspection program for collective protective equipment. Labels on equipment depict the date of last inspection. Fire extinguishers are inspected every month and recharge is carried out on annual basis, in accordance with Brazilian legislation. Showers and eyewash stations are tested and it can be noticed they are running perfectly. Inspections are recorded and filed in the industrial safety department. Maintenance corrects non-conformities by means of service orders, and the sector requesting the service gets confirmation that the service order was carried out through e-mail. Low-pressure eye wash stations and non-acidic fire extinguishers are strategically positioned throughout the operation and there is evidence that all of the equipment is maintained, inspected and tested on a regular basis, in accordance with a maintenance plan.

Operation is provided with excellent medical structure. It has an ICU (Intensive Care Operation)-type ambulance and medical service with appropriate structure. A full team works onsite during the administrative shift and, during the rest of the time, there are rescuers prepared to give basic attention and transport victims to medical centers. Medical structure works on a 24-hour basis for the entire industrial complex in Candeias and Camaçari. It is called PAME – Emergency Medical Care Plan, with two emergency doctors, nurse, nursing technicians and ambulance drivers. They can provide treatment to

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victims of cyanide intoxication.

Exposed workers can be readily transported to qualified offsite medical facilities. During a practical test, the ambulance driver achieved excellent time while driving between the Operation and PAME installations.

Records of trainings show that the subject was handling, storage and first aids with cyanide, involving 27 people from PAME medical team, and the instructor was a specialist in occupational health.

An accident occurred on 12/29/2011. An operator was running inspection on plant equipment (cyanide dryer). When attempting to check the bottom of the equipment cyanide particles got in contact with his eyes. The Operation team conducted a formal investigation of the accident and the causes identified were: the cyanide dryer was obsolete equipment which eventually presented small leaks to atmosphere and it was operated under positive pressure. The operator was not using the proper eye protection. During the investigation the following corrective actions were established: the type of safety glass was replaced in the entire cyanide unit by wide vision goggles fully sealed and all Operators were retrained. The cyanide dryer technology was updated with the replacement of the main equipment in January 2012, and it currently operates under vacuum with no possibility of cyanide leaks to the atmosphere.

3. MONITORING: Ensure that process controls are protective of the environment.

<u>Production Practice 3.1</u>: Conduct environmental monitoring to confirm that planned or unplanned releases of cyanide do not result in adverse impacts.

The operation is
- X in full compliance with
- in substantial compliance with Production Practice 3.1
- not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The Operation has a direct discharge to surface water, and monitoring is established by Liquid Effluents Management Plan – LEMP. Monitoring consists in the collection and analysis of liquid effluents samples in order to determine the concentration of certain substances (parameters) of interest. LEMP has two purposes: to verify if legislation is being observed and to collect data for the study of the characterization of liquid effluents.

Samples collected in the São Paulo River between Sep/04/2012 and Sep/26/2012 had as a result <0,001mg/l. CN / DEI Weak Acid Dissociable Cyanide.

This cannot be applied to an indirect discharge to surface water. All effluents from the cyanide Operation undergo previous treatment and framing CN parameter to take values smaller than 0.02. After the specified effluent is drained into the first reversal pond, it is

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subsequently forwarded to the equalization basin, where it joins all waste streams from the plant and after there is confirmation that results are below the established limits it is drained into the São Paulo River.
The entries are authorized by INEMA (Environmental Agency of the State of Bahia) by Operating License 14.409.
The procedure in the Atmospheric Emissions Management Plan establishes the process of management and control of atmospheric emissions, punctual and fugitive results of activities in Proquigel – Candeias, with emphasis in the mitigation, control and monitoring of these emissions.
In accordance with Brazilian legislation, by means of CONAMA Resolution 316, the atmosphere emission parameter for HCN is 7.00 mg/Nm³.
The average levels in the Candeias Operation were 1.26 mg/Nm³. Monitoring is done every six months by a specialized Operation and sent to the local environmental agency.
There is a report on the monitoring of atmospheric emissions dated June 2012, issued by ECMA – Environmental Control Engineering Ltd. The field activities refer to the collection and analysis following ABNT– Brazilian Technical Standards Association and USEPA – US Environmental Protection Agency methods.
Monitoring is conducted at frequencies that are appropriate to characterize the medium being monitored and to identify changes in a timely manner. Frequency applied is every six months. License conditions and monitoring data are appropriately stored.
Regarding WAD cyanide concentrations, Procedure MEA.P.03 Rev. 2 - Management Plan of Groundwater is applied in order to establish the management criteria for protection of groundwater.

4. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

Production Practice 4.1: *Train employees to operate the plant in a manner that minimizes the potential for cyanide exposures and releases.*

The operation is
X in full compliance with
in substantial compliance with Production Practice 4.1
not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

With the concourse of the Human Resources, which is common to both facilities (Camaçari and Candeias), the Operation established, documented and implemented the organizational standard training with the objective of having workers understand the hazards of cyanide. Refresher training is periodically offered.
The Operation uses the “Table of Functions” to program and give training to each job identified. Furthermore, PAT establishes specific training for employees, who also additional training and are recycled to work with cyanide. The qualification required is

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that a labor doctor, a nurse, safety technicians and safety engineers give training. All professionals must have been working for more than one year in the plant and must have been trained by other professionals who were there before.

The Operation evaluates effectiveness by means of testing, interviews, observation, and periodical improvement, according to what is established in the specific procedure. Good practice trainings are conducted through EAD (Remote Study), with modules and are parameterized with Matrix Training as to the function. When training ends a certificate is issued with an electronic signature of the instructor. It is noteworthy that the organization uses this same technology for PPE, PPR, PCA and TBC (Basic Training Cyanide) modules.

The Operation runs five simulations every year. Besides, there is a program for the formation of brigade members, who are trained in both theoretical and practical aspects.

There is first-aid training, as well as training in chemical emergency, firefighting, rescue and other simulations in accordance with the risk scenarios.

An exercise simulating cyanide transport was done on Jul/ 3l/2012 at 10:00 AM in partnership with Concórdia Transportes.

<u>Production Practice 4.2</u>: Train employees to respond to cyanide exposures and releases.

The operation is
- X in full compliance with
- in substantial compliance with Production Practice 4.2
- not in compliance with
- not subject to

Summarize the basis for this Finding/Deficiencies Identified:

Evidence contained in records shows the complete training of the Emergency Brigade, in accordance with the scenarios established in the Emergency and Response Plan. There is also evidence of a drill in accordance with scenarios established in the Emergency and Response Plan. Effectiveness of internal training in preparation emergency and its response can be checked by means of videos, photos, interviews and reports.

Training evidence can be found in items such as attendance lists the participation protocol, which include the names of the employee and of the trainer, the date of training, the topics covered, and how the employee demonstrated understanding of the training materials. The document Temporality Table establishes the time of retention throughout an individual's employment time.

An exercise simulating cyanide transport of cyanide was done on Jul/31/2012 at 10:00 AM, in partnership with Concórdia Transportes.

5. EMERGENCY RESPONSE: Protect Operation and the environment through the development of emergency

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response strategies and capabilities.

<u>Production Practice 5.1</u>: Prepare detailed emergency response plans for potential cyanide releases.

The operation is
- X in full compliance with
- in substantial compliance with Production Practice 5.1
- not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

There is evidence of the document "Emergency Response Plan to the Cyanide Plant", which establishes the procedures to be observed and accomplished in emergency situations with cyanide, with the objective of restoring operational normality and minimizing accidental damage caused by the emergency. Accident detailing is in accordance with what is defined in SEG.P.19.

<u>Production Practice 5.2</u>: Involve site personnel and stakeholders in the planning process.

The operation is
- X in full compliance with
- in substantial compliance with Production Practice 5.2
- not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

There is objective evidence that workforce was involved in the Program Ver de Dentro "A View from the Inside".

By means of the November 2008 letter sent by Mr. Roberto Fiamenghi – Superintendent Director to the stakeholders, the Operation informs that the International Cyanide Code Project establishes the implementation of the requirements for compliance with the ICMI Code. He also sends a CD containing important information on the group, the cyanide and the code management, its origin, principles and elements. It contains details of the Emergency Response Plan, with evidence of the actions developed by MAP – Mutual Aid Plan and by PERP – Medical Emergency Response Plan.

Evidence can be found in the "Participation Protocol" that there are outside responders and Medical Facilities in the Emergency Planning and Response process: PERP – Medical Emergency Response Plan; COFIC - Committee for the Promotion of Industries in Camaçari; SESAU – Camaçari Health Secretariat; SEPLAM – Secretariat of Planning and Environment in Camaçari; SEINC – State Secretariat for Commerce and Industry; CETREL - Environmental Protection

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Operation. The Emergency Plan has proved to be able to identify potentially affected workers and operations. Furthermore, the Operation has carried out studies in the risk scenarios – APP in order to define the potential of some any risk scenario that reaches it. The Operation has also implemented a communication system based on the "General Emergency Plan" establishing communication and consultation among workers, contractors, visitors, other facilities and neighbors. The Operation revises its procedures every two years, and always consults the parties interested. Besides, the Survey of Aspects / Impacts and Dangers / Risks contains a critical analysis of the risk scenarios with the participation of the parties interested. Preliminary danger analysis is revised at most every five years and it is carried out by a multidisciplinary team comprising the diverse areas involved, including stakeholders.

Production Practice 5.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.

The operation I
X in full compliance with
in substantial compliance with
not in compliance with
Production Practice 5.3

Summarize the basis for this Finding/Deficiencies Identified:

The Emergency Plan identifies all members in the emergency structure, and it details each member's function in the emergency structure. The General Emergency Plan and the SEG Emergency Response Plan for Cyanide Plants respectively establish the definition of responsibilities for primary and alternate emergency response coordinators with explicit authority to commit the resources necessary to implement the Plan and the procedures adopted, which are to be observed and carried out in emergency situations with cyanide in order to reestablish operation normality and mitigate accidental damages caused by emergency. The General Emergency Plan also establishes primary and alternate emergency response coordinators who have explicit authority to commit the resources necessary to implement the Plan. Emergency Brigade received full training, in accordance with the scenarios established in the Emergency Response Plan. During a simulated situation the auditor noticed that the level of information is good.

The Emergency Response Plan comprises full training, foreseen in the Annual Training Plan, for members of Emergency Brigade, and counts on the participation of Human Resources during the training. Coordinators and response team members receive call-out procedures and 24-hour contact information in accordance with what established in SEG.P.05 General Emergency Plan. NS 004, which contains an enclosure to be used with Radio Procedures PAM, Rev. 01/Nov./10. Contact information was considered good by auditing. All available emergency response equipment is listed in accordance with SEG.P.05- General Emergency Plan. Also in

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accordance with the plan, procedures are included in order to inspect emergency response equipment, thus assuring its availability when required. The plan describes the role of outside responders, medical facilities and emergency response procedures as well.

<u>Production Practice 5.4</u>: Develop procedures for internal and external emergency notification and reporting.

The operation is	X in full compliance with in substantial compliance with not in compliance with	Production Practice 5.4

Summarize the basis for this Finding/Deficiencies Identified:

The Emergency Plan is able to identify what can potentially affect the Operation. Furthermore, the Operation has carried out studies in the risk scenarios – APP in order to define the potential of risk scenarios reaching it.
In case of a situation affecting the Operation, the plan states that a committee is to be formed and an Operation representative will communicate with the Operation. In the Mutual Aid Plan we find CDU, which forms Operation representatives who know how to proceed during an emergency. These representatives have phones through which it is possible to alert and instruct workers on how to proceed. They can start evacuating a certain Operation that is closed, in accordance with definitions in the Contingency Plan. The Auditor noticed the Operation develops procedures for internal and external emergency notification and reporting.

<u>Production Practice 5.5</u>: Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

The operation is	X in full compliance with in substantial compliance with not in compliance with	Production Practice 5.5

Summarize the basis for this Finding/Deficiencies Identified:

The General Plan of Emergency and Emergency Cyanide Response Plan respectively establish the definition of responsibilities awarded to primary and alternate emergency response coordinators with explicit authority to commit the resources necessary to implement the plan and respectively establish the procedures to be observed and carried out in cyanide emergency situations in order to reestablish operation normality and

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mitigate as much as possible accidental damages caused by emergency. The Operation incorporates into the response plan and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

Ventilation is a key factor when speaking of spilt material. Thus, containers holding cyanide should be kept closed while the area is cleaned. The affected area must be evaluated as to the kind of product spilt, its characteristics, the existence of water intake spots, used by population or for economic purposes, the existence of constructions near the leakage, degree of contaminant dispersion in the water, etc. Actions are to be taken in order to reduce the impact of the accident in the environment. If product leaked into the water, immediate containment must be done near the leakage area and if it leaked into the soil, digging a ditch into which the product can be conducted and then sent to the appropriate place is very important. It is evident that the Operation incorporated to response plans and remediation measures important monitoring elements that can help in the control of additional hazards caused by the use of cyanide treatment chemicals.

<u>Production Practice 5.6</u>: Periodically evaluate response procedures and capabilities and revise them as needed.

The operation is
- X in full compliance with
- in substantial compliance with Production Practice 5.6
- not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

There is evidence that the Operation incorporates into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals and periodically evaluates response procedures and capabilities, revising them as needed. Evidence of the annual review of the Emergency Response Plan is in the Document Control System. There is evidence that five drills are performed every year, with reports containing photos, response time, simulated scenario and identification of improvement.

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