

Fred Leuchter

The Third Leuchter Report

A Technical Report on the Execution Gas Chambers at
Mississippi State Penitentiary, Parchman, Mississippi

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1. Eaton Proposal for Mississippi Lethal Gas Chamber

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0.000 INTRODUCTION.

In October of this year (1989), I was asked by Mr. Ernst Zundel of Toronto, Canada to inspect and document, in text, still photography, and video tape, an existing execution gas chamber in the United States.

This gas chamber was designed and constructed solely for the purpose of the execution of convicted criminals under United States law by means of hydrogen cyanide gas (Zyklon B). On November 15, 1988, I inspected the Execution Gas Chamber at the Mississippi State Penitentiary and documented said inspection with both still photography and video tape.

My international party consisted of Mr. Eugene Ernst, an experienced still and motion picture photographer, from Canada, who accompanied me to Germany and Austria earlier this year; and Mr. Karlheinz Geiger, from West Germany, a well-known documentary film producer. This report and subsequent on-site documentation are a result of that inspection.

1.000 PURPOSE.

The purpose of this report, and the inspection upon which it is based, is to verbally and graphically demonstrate the design requirements and construction requirements and operational protocol and the personnel safety requirements of an execution gas chamber which utilizes hydrogen cyanide (Zyklon B) gas for the execution of one or more condemned prisoners.

This report is intended as, and in fact does, support and corroborate the design and construction criteria defined in "The Leuchter Report" of April 5, 1988. (See paragraph 2.001 for correct name.) Because of the broad acceptance and use of "The Leuchter Report" in Europe and throughout the world, and a widespread demand for information and documentation on the only existing gas execution facilities, found only in the United States, Ernst Zundel commissioned this report. The information concerning the design and construction criteria on gas chambers and their operational protocol contained in this report is intended for use by all scholars so that they may determine for themselves the impossibility of the existence of the alleged German (Nazi) Gas Chambers which are purported to be, or purported to have been, in various locations throughout German occupied Europe.

2.000 BACKGROUND.

The principal investigator and author of this report is a specialist in the design and fabrication of execution hardware in the United States utilized for the execution of condemned persons by means of hydrogen cyanide (Zyklon B) gas. Additionally, the investigator has constructed hardware for electrocution, lethal injection and hanging.

2.001 The investigator has inspected the alleged gas-execution facilities at the German Concentration Camps in Poland and previously authored "A Technical Report on the Alleged Execution Gas Chambers at Auschwitz, Birkenau and Majdanek, Poland". The investigator has likewise inspected the alleged gas chambers

at Mauthausen Concentration Camp and Hartheim Castle in Austria; and Dachau Concentration Camp in Germany. He also has authored "A Technical Report on the Alleged Execution Gas Chambers at Dachau, Germany, Mauthausen and Hartheim Castle, Austria".

2.002 The investigator has inspected the Gas Execution Chamber at the Mississippi State Penitentiary, has considered drawings of the chamber, consulted with the skilled operators of the chamber, studied the execution protocol utilized with the chamber and made drawings, photographs and video tapes of the chamber.

2.003 The investigator did not construct the Gas Execution Chamber at the Mississippi State Penitentiary, nor is he responsible for the protocol utilized there. This chamber was built in the early 1950s by the Eaton Metal Products Company of Denver, Colorado who constructed this chamber, as they did most of the other chambers in the United States. In the construction of this chamber they utilized design criteria first developed and used in the early 1920s for the Arizona Gas Chamber. The protocol is wholly Eaton's, with the exception of special tailoring by the states.

3.000 SCOPE.

The scope of this report includes a physical inspection and quantitative data obtained at the death House (Parchman, Mississippi) at the Mississippi Department of Corrections, first hand operational information supplied by operating personnel and the investigator's own personal knowledge and work in the field.

3.001 Utilizing all of the above data, the investigator has limited the focus of this study to the development of a criteria package for the understanding, design, fabrication and use of execution gas chambers. This package is intended for use by those persons and scholars who would study the history and use of execution gas chambers and will enable the user to apply the aforementioned criteria to alleged existing gas execution facilities throughout the world and to make a scientific determination if any facility was ever used for, or could ever have supported the function of a homicidal execution gas chamber.

4.000 HISTORY.

The history of the use of hydrogen cyanide gas for execution purposes and the development of the gas chamber is strictly a United States phenomenon. Prior to 1890, hanging was the legally utilized procedure for execution in the United States. In an attempt to find a more humane procedure, the New York State Assembly adopted electrocution. Many other states followed by accepting electrocution. Others were not satisfied, for one reason or another, and sought a more humane procedure. Because hydrogen cyanide gas was being utilized for fumigation purposes, some states began to look at the possibility of gassing.

4.001 In the early 1920s, Arizona passed enabling legislation and contracted with Eaton Metal Products of Denver, Colorado; Casper, Wyoming; and Salt Lake City, Utah to construct their new execution system utilizing hydrogen cyanide gas. Eaton developed a gas chamber to contain the gas, a generator to manufacture the gas and a protocol to safely utilize the new equipment. Eaton subsequently installed chambers

in Arizona, California, Colorado, Maryland, Mississippi, Nevada, North Carolina, Rhode Island and Wyoming. Missouri also utilized gas after the 1930s but their gas chamber, although as complex as the others, was constructed by a different company. Records at Missouri do not indicate who the builder was. The only major difference in all these chambers was whether they were for one or two executees.

4.002 In the years that have passed, most states have changed from gas to safer procedures. The only remaining states still utilizing gas are Arizona, California, Maryland, and Mississippi and some of these states are considering changing to the safer procedure of lethal injection.

4.003 It is extremely fortunate that although gas handling accidents have occurred, none has resulted in injury or death to gas chamber personnel as have accidents involving the use of hydrogen cyanide gas in other industries.

5.000 MISSISSIPPI DEATH HOUSE.

The Death House at the Mississippi State Penitentiary is a one and a half story facility measuring some seventeen (17) by twenty (20) feet containing some three hundred forty (340) square feet and some two thousand, nine hundred ninety-two (2,992) cubic feet, owing to a ceiling height of some eight feet ten inches (8' 10"). It occupies part of, but is isolated from, the L-shaped Maximum Security Facility containing the maximum security cells for the prison and Death Row. The entire facility is constructed of red brick. It has three steel doors, one from the Death Row area of the Maximum Security Facility opening into the Control Room (used to bring the executee into the Death House), a second in the rear of the building for official witnesses which opens into the Witness Room and the third, or main door, which opens from the main yard into the Control Room.

5.001 The Lethal Gas Chamber, which occupies the proximate center of the Death Chamber, and the associated plumbing and hardware comprising the gas execution system, was installed by the Eaton Metal Products Company in October of 1954. It was reconditioned by Eaton In 1982. This system is a typical Eaton Lethal Gas Chamber and differs from other Eaton installations only by virtue of the fact that this has a single seat where some of the others have two. The design and construction of the Eaton Lethal Gas Chamber has not changed since the original installation in Arizona in the early 1920s.

5.002 The Execution Chamber, 17 feet by 20 feet, is separated into three rooms by two partitions. The first partition divides the longer dimension of the chamber. From its anchor on a long wall, the partition extends slightly less than half-way towards its opposite anchor before encountering the mid-perimeter point of the hexagonal Gas Chamber which has an interior diameter of 6' 2". Thus half of the Gas Chamber is in each room.

The partition is, in reality, a riveted steel bulkhead. It runs vertically from floor to ceiling. This divider separates the work area from the witness room, which is the largest of the three rooms. A second wall is fabricated of mortar, brick and plaster and runs perpendicularly from the steel bulkhead to the shorter, outside wall in the work area. It has a door and window, and separates the Chemical Room from the Control

Room. The Chemical Room, which is the smallest of the rooms, has a trap door in the floor at the far end, which accesses, via a ladder, a pit beneath the lethal gas chamber. In this pit is located the necessary plumbing for the lethal gas chamber and the gas generator. The Chemical Room contains a sink, counter, the acid mixing pot, the inlet valve and the necessary plumbing for the introduction of the acid/water and ammonia into the gas generator of the lethal gas chamber. The floor of the entire area is painted concrete.

6.000 THE LETHAL GAS CHAMBER.

The lethal gas chamber is of welded and riveted steel construction. It is hexagonal in shape, but with the corners replaced with the base of an equilateral triangle whose theoretical third angle would have been the original corners of the hexagon. The base of this triangle measures some 7". Thus, each corner is actually two seams instead of one, each seam being one of the base angles of the equilateral triangle. The roof of the chamber is fabricated by a continuation of the side segments at pitch of some 31 degrees from the horizontal. The height of the roof is some 23" above the top of the chamber. The chamber measures some 6' 2" in diameter from corner to corner and some 8' 10" high in the center. The floor area of the chamber is about 29.7 square feet and the volume of the chamber is some 263 cubic feet.

6.001 The lethal chamber has five gasketed windows of bullet proof glass set in riveted steel frames measuring 36" high by 25" wide. The tightness of the window gaskets is controlled by a series of nuts around the window frame which are loosened when the chamber is not being used, to extend the life of the gaskets. Three windows open into the Witness Room and two into the Control Room. The door aperture is 77" high by 34" wide and is oval in shape. A shaped neoprene gasket surrounds the opening which seals against a ribbed clamshell-like door.

Closure of the door and sealing is effected by means of a wormscrew assembly which is turned by a nautical-type wheel. The wormscrew is threaded through a curved bar which is fastened on one side to the hinge assembly and the other to a latching frame (dog). As the worm is turned, it bears against the curved bar which in turn pulls against the latching dog and the hinge, thus forcing the door against the gasket and sealing the aperture. The door is hinged in two places on the left side outside the chamber. The intake air valve is mounted at the base of the chamber to the left of the door on the outside. It is piped clockwise around the chamber to air intake grilles in the facets of the hexagon sides.

This comprises the air intake manifold system. There is one grille for each side (hexagon facet), except at the location of the door. An ammonia injection system is connected to the air intake manifold to neutralize any gas residue in the chamber and prevent any un-neutralized air-gas mixture from leaking back into the air intake manifold. A shroud completely covers the manifold piping for the intake air.

6.002 At the exact center of the top of the lethal gas chamber the exhaust valve and the 7" diameter exhaust piping, exit the chamber and continue on through the exhaust

fan and the roof to the exhaust stack. The exhaust stack is some 13.5' above the roof. The Air Exhaust Valve is controlled by a lever and a mechanical connection external to the chamber and to the left of the door. The exhaust fan is coaxial to the exhaust piping above the chamber and is mounted on a frame on the roof of the chamber. The exhaust flue turns 90 degrees at the top of the chamber and enters the exhaust fan where it again turns 90 degrees to exit the building.

There is a mechanical plumbing vent from the gas generator under the chamber which connects to the exhaust system just prior to the exhaust fan. This vent passes through the floor of the gas chamber and the roof of the gas chamber before it inter-connects with the exhaust above the lethal chamber. The exhaust fan has a back-up motor in the event that the prime motor fails.

6.003 There are three explosion-proof lighting fixtures mounted in the ceiling of the chamber spaced at 120 degrees, the first being centered directly in line with the door. These fixtures are mounted at 90 degrees to the surface of the ceiling with the inlet being nearest the center of the chamber. Mounting these at 90 degrees to the surface allows for more head clearance when standing in the chamber. Additionally, there is an inlet and an outlet for both a mechanical stethoscope and an electronic heart monitor.

These are to the right of the door as viewed from the outside. There is also mechanical linkage for controlling the sodium cyanide pellet drop into the gas generator and opening the vent valve which enters the right side of the chamber and traverses the floor to center of the chamber. A single chair occupies the center of the chamber directly over the gas generator. This chair is fabricated of steel and has head, arm and leg restraints. The chair is painted with black acid-resistant paint. The chamber interior and exterior has been painted with aluminum acid-resistant paint.

6.004 The lethal gas chamber is also equipped with a manometer, which reads the pressure in the chamber in inches of mercury. This enables the operators to determine if there is a pressure leak in the chamber at any time. There is also a shelf within the chamber upon which is placed a watch glass of phenolphthalein solution which is used as an indicator as to the presence of gas in the chamber. When the chamber is clear of gas, the color of the phenolphthalein turns bright red.

6.005 The Gas Generator and plumbing system occupy the Lethal Gas Chamber, the Control Room, the Chemical Room, and the pit beneath the gas chamber. The Chemical Room contains the start of the system, and the gas generator in/under the lethal gas chamber is the termination of the system which dumps into a special sewer line.

6.006 The Chemical Room contains Acid Mixing Pot (9), trap #1, Ammonia Injector and Injector Valve (8), Inlet Valve (3), two water spigots at the Mixing Pot location, and a sink with running water elsewhere in the room.

6.007 The Control Room contains Outlet Valve (4), being the only item not affixed to the lethal chamber. Affixed to the chamber are a Fan Damper Lever for Air Exhaust Valve (5), Ammonia Injector and Manifold Injector Valve (7), Air Valve Lever and Air Intake Valve (2), Gas Valve Lever (1), which controls Gas generator Valve (10),

Gas Generator Vent Stack Valve (A) and Cyanide Briquet Container (B), Packing Gland (11), Manometer (6), Vent Stack (C), and the Exhaust Fan which has a second back-up motor in event that the prime motor fails. Additionally, the switches for the emergency exhaust fans for all three rooms (Control, Witness, and Chemical) are located here

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6.008 The Pit beneath the Lethal Chamber contains trap #2, Gas Generator (D), two drain systems and one water supply system. All piping for the acid and gas drain and vent system is stainless steel. All piping for the sink drain and vent system is galvanized. The main drain is 4" black iron. This drain is not part of the prison's normal sewer system, which allows the hydrocyanic acid to biodegrade harmlessly into the environment.

6.009 There is an emergency exhaust-fan system to clear all three rooms in the event of a gas leak and emergency lighting in all three rooms as well. Further, in the event of a power failure, there is a back-up generating system which will supply electricity to ensure that the exhaust fan does not stop and the vacuum drop in the chamber, causing a leak of lethal gas.

Note: Numbers in parentheses are Eaton's numbers. Letters in parentheses are the investigator's. Number designations for Valves (numbers 3 and 4) are transposed in Eaton's text but not in the Eaton drawing. They are correct in all other locations.

6.010 The Gas Generator is comprised of the Gas Generator (D), Gas Valve Lever (1), the associated actuation linkage and Packing Gland (11), Gas Valve (10), Gas Generator Vent Stack Valve (A), and Cyanide Briquet Container (B), Gas Valve (10) is utilized as a seal for testing the integrity (pressure test) of the chamber, as well as, the mechanism for controlling the Cyanide Briquet (pellet) drop, while the actuator additionally controls the opening of the Gas Generator Vent Stack Valve (A). When Gas Valve (10) is closed, the Gas Generator Vent Stack Valve (A) is open, and conversely.

6.011 The two Ammonia Injectors and their associated Injector Valves (7) and (8) are operated in the following manner: they consist of a glass bottle filled with ammonia with a rubber stopper. Through two holes in the rubber stopper, two tubes are inserted. The outlet tube is immersed in the ammonia (goes deep into the bottle) and is connected to the Injector Valve, which is in turn, connected to the lethal chamber air-

intake manifold or the piping directly beneath the Acid Mixing Pot (9), before Inlet Valve (3). The pressurizing tube barely enters the bottle and has a rubber pump ball on the other end. Air is pumped into the bottle utilizing the rubber pump ball which creates pressure on the surface of the ammonia, forcing it out of the outlet tube into the system, when the respective Injector Valve (7) or (8) is open.

7.000 LETHAL GAS CHAMBER FUNCTION.

The function of a Lethal Gas Chamber is simple in theory, but complex in actual usage. Essentially, the executee is sealed into a chamber which is inwardly pressurized (evacuated) causing any leak of dangerous hydrogen cyanide gas to be inward. By means of an external actuator, sodium cyanide pellets (briquets) are dropped into warm, dilute sulfuric acid within the chamber. Hydrogen Cyanide (Zyklon B) gas is generated within the chamber due to the chemical reaction of the sodium cyanide and the sulfuric acid. The released gas surrounds the executee and terminates his life. After a sufficient time has elapsed, the chamber is ventilated completely, with air in excess of 80 degrees Fahrenheit, many times over, and the subject is removed after proper neutralization with ammonia. The prussic acid, residual to the chemical reaction, must be disposed of. The Chamber must be neutralized by washing with ammonia and caustic soda or chlorine bleach. Care must be taken in handling the corpse, cleaning the chamber and gas generator, and evacuating the gas to see that no one other than the executee is killed.

7.001 The Mississippi Lethal Gas Chamber is operated in the following manner. First, it is tested to determine if all of the plumbing is clear and tight. This is done by opening Inlet Valve (3) and Outlet Valve (4) and running tap water into the Acid Mixing Pot (9) for five minutes. This determines that there are no blockages in the plumbing. Then Valve (4) is closed and tap water is run into the Acid Mixing Pot filling the Gas Generator (D) to the floor level of the lethal chamber. The piping in the pit is then inspected to determine that there are no leaks. The Gas generator Valve (1) is then closed by utilizing Gas Valve Lever (1), trapping the water above the valve at floor level. Then, Outlet Valve (4) is opened, allowing the water to drain into the sewer, since Gas Valve Lever (1) has opened the Gas Generator Vent Stack Valve (A).

7.002 Next is the vacuum test. First, check the Packing Gland and tighten the window frames onto the gaskets. Close and seal the door. Then place some water around Air Intake Valve (2) (to ensure a tight seal) and close Valve (2) by actuating Lever (2). Open Air Exhaust Valve (5) by means of Fan Damper Lever (5) and start exhaust Fan. This will pull a vacuum on the chamber. We must now monitor the Manometer (6) to determine if it remains constant or indicates there is a leak. If there is no leak, the following is done to effect an execution: turn off fan and open the Air Intake Valve (2). This relieves the vacuum. Open the door. The heat must be turned on and the Death House brought to and maintained at a temperature of over 80 degrees Fahrenheit to prevent condensation of the hydrocyanic acid on the interior of the gas chamber, which would make cleanup extremely dangerous. Hydrogen cyanide gas condenses at 78.3 degrees Fahrenheit (25.7 degrees Celsius) and the intake air in the control room must be kept above this temperature.

7.003 Utilizing the Gas Valve Lever (1), the Gas Generator Valve (10) should be opened and closed to eliminate any water trapped above the floor in the last test. The Sodium Cyanide briquet container above the valve should be thoroughly dried so that no moisture will reach the cyanide briquets until the execution begins. The door gasket, the window frames, the Packing Gland, the Manometer inlet, and the two heart monitor connections are coated with petroleum jelly as a guard against leakage. Two or more gallons of distilled water are poured into the system to insure that traps # 1 and # 2 are full. All chemicals (acid and water as well as caustic soda) are mixed and readied.

Outlet Valve (4) should be closed to seal the system from the drain, and Intake Valve (3) should be closed to contain the acid/water mixture until ready. The Gas Generator Valve (10) should be verified as closed and the locking pin installed through the hole in the Gas Valve Lever. The sodium cyanide briquets should now be placed in the briquet container above the valve. The Acid should be mixed with warm distilled water and placed in Acid Mixing Pot (9). Air Intake Valve (2) should be closed. The Ammonia Injectors should be made ready by closing the Injector Valves and by pumping up the pressure. The watch-glass of Phenolphthalein solution is placed on the shelf within the chamber. The doctor tapes the mechanical stethoscope and the electronic heart monitor to the executee's chest. The door is closed and sealed.

The doctor verifies that the two heart monitors are working. The Air Exhaust Valve (5) should be closed and the Exhaust fan should be started. The vacuum should be monitored on the Manometer (6). Inlet Valve (3) should be opened allowing the acid/water mixture into the gas generator, and then closed. The Acid Mixing Pot (9) should be completely filled with tap water to prevent backflow of gas. The Lethal Chamber is now ready for the execution.

7.004 The Emergency exhaust fans are now verified as operational. A monitor is stationed at the Manometer. A monitor is at each chamber window, Air Intake Valve (20), and the chamber door with a hand held gas detector which sense Hydrogen Cyanide Gas to 10 ppm (parts per million). The emergency breathing apparatus (air packs) are verified as being immediately available to those present in the Death House. The execution can now proceed. The manometer (vacuum) is verbally verified and Air Intake Valve (2) is visually verified as closed. Additionally, special hydrogen cyanide first-aid kits are on hand in the Death House, special emergency physician's medical kits and two resuscitators are on hand at the infirmary, and two emergency ambulances are on standby inside the prison. The guard tower at the entrance sally port of the Maximum Security Facility is evacuated as a precaution against wind carrying the expelled air-gas mixture to the tower and killing the guard stationed there. This is the only time that this most important security post is abandoned.

7.005 On command from the Warden, the execution is begun and the witness curtains opened. The locking pin is now removed from the Gas Valve Lever and the Gas Valve Lever (1) is thrown, opening the Gas Generator Valve (10) which drops the cyanide pellets into the acid solution beginning the generation of the gas. The monitors verify that the vacuum is holding and that there are no leaks detected. After several minutes, the executee will be dead and the doctor will verify this fact. The doctor will wait several more minutes and inform the Warden that the subject is dead. (Total time normally ten [10] minutes.) The Warden will then order the chamber to be cleared of gas and the witness curtains closed.

7.006 The Gas Valve Lever (1) will be returned to closed position which will close the Gas Generator Valve (10) (which will prevent any further gas from entering the chamber) and open the Gas Generator Vent Stack Valve (A) preparing the Gas Generator for draining. The Fan Damper Lever will be thrown, opening the Air Exhaust Valve (5). The Air Intake Valve (2) will be opened and the Manifold Ammonia Valve (7) opened. The Chamber will begin exhausting the air/gas mixture and the ammonia will begin to neutralize the hydrogen cyanide and protect against any leakage back through the Air Intake Valve (2). The Chamber will be cleared (according to tests) in one minute (Eaton says three). This exhaust procedure will continue for fifteen (15) minutes (at Eaton's instruction) to guarantee at least five full air changes.

Open Outlet Valve (4) allowing the prussic acid residue to pass into the sewer. Open Inlet Valve (3) allowing water in Acid Mixing Pot (9) to pass into the plumbing and flush the system while opening Ammonia Injector Valve (8) to insure no back-flow of poison gas. Pour Caustic Soda solution into Acid Mixing Pot (9) and flush continuously with tap water for fifteen minutes or more. Both Ammonia Injectors (Valves 7 and 8) should be turned off in ten (10) minutes.

7.007 After at least fifteen minutes of venting the chamber, the phenolphthalein solution should be checked for its characteristic red color, indicating that the chamber is clear. When the chamber is clear, two operators, wearing full chemical suits with air-packs and rubber gloves, will open the chamber and verify with gas detectors. (Previously, gas masks with hydrocyanic acid and ammonia were utilized.) The operators in the chemical suits ruffle the executee's hair to eliminate any trapped gas and then spray the executee and the chamber with ammonia. The doctor, now wearing a chemical suit with an air-pack, makes the final pronouncement of death.

The executee is now undressed and washed with a caustic soda or ammonia solution and is removed from the chamber and redressed in different clothing. His body is then ready for removal by the undertaker, who works on the body thereafter, with rubber gloves. The clothing worn by the executee at the time of execution is placed in a plastic bag and sealed, after which it is disposed of, generally by incineration.

The Gas Generator Valve (10) is now opened by throwing Gas Valve Lever (1). The Lethal Chamber and all its contents are washed with caustic soda (walls, floor and ceiling) and the residue flushed into the Gas Generator at the base of the chamber and thence down the drain. Gas Generator Valve (10) is then closed by throwing Gas Valve Lever (1) and the plumbing continuously flushed for another ten (10) minutes. Upon completion of the cleanup, approximately an hour after the execution ended, the Death House is secured with the exhaust fan left running.

7.008 The following day, the step-down maintenance is performed. An inspection is made to determine if everything is dry. The fan is then turned off. The equipment is then stored in its proper place. All valves are closed and then opened to half position to eliminate pressure on the packing. The nuts on the window frames are loosened to eliminate pressure on the gaskets. The door to the chamber is left open so there is no pressure on the gasket. The Air Exhaust Valve will not be closed, to eliminate pressure on the gasket. The Death House is now made permanently secure.

7.009 Prior to the next usage, all valves will be checked, the window gaskets will be tightened and the Packing Gland will be re-packed. The Chamber will be again tested to the procedure outlined above.

7.010 The two man Lethal Gas Chambers built by Eaton were identical in design and construction to the one man chamber at Mississippi except that they had two seats and duplicate plumbing systems requiring that all chemical procedures had to be completed twice. Some of these chambers required that the cyanide pellets (often called "eggs") be placed in a gauze sack and dipped into the acid solution in the generator below the chamber by a trip mechanism similar to the one in Mississippi except that it was suspended from the chain instead of being fastened to the floor. This was changed because it was safer, in that no one had to handle the gauze sack after the execution.

7.011 The chemicals used by Mississippi are an approximate 37% Sulfuric Acid Solution (acid and distilled water) and an approximate 16 ounces of sodium cyanide. This requires twelve (12) pints of distilled water and six (6) pints of acid (98%) resulting in 18 pints of dilute sulfuric acid reacting with 24 briquets of sodium cyanide. This results in two (2) cubic feet of Hydrogen Cyanide gas at the 10 psi (approximate) operational pressure or an amount of approximately 7500 ppm.

8.000 DESIGN CRITERIA FOR A LETHAL GAS CHAMBER.

This basic design was developed almost seventy years ago by those tasked with designing a device for the execution of condemned criminals. With very few exceptions, it is still state of the art. It is basic, effective and reasonably safe. Failure to follow these criteria in the design of a gas chamber would result in death to the operators and others not concerned with the execution process. These criteria were developed in the United States, where the only execution gas chambers were ever built, or used. These basic design principles have proven themselves for almost three-quarters of a century. They were even utilized by the Germans in the construction of their delousing chambers to fight vermin infestation and typhus in central Europe in the 1930s and 1940s.

8.001 Required: Design a Lethal Gas Chamber to utilize hydrogen cyanide gas for the execution of convicted criminals, knowing the gas is extremely deadly, explosive, and condenses at 78.3 degrees Fahrenheit.

8.002 The chamber and all inlets, whether electrical or mechanical, must be sealed to prevent leakage. The door must be gasketed with some type of pressure seal as used on water-tight doors at sea. The windows, if any, must be gasketed and sealed. Further, the chamber must be operated at a pressure less than the outside ambient pressure (vacuum) to insure that any leak would be inward.

8.003 Because the gas is explosive, all lighting and electrical hardware in the chamber must be explosion-proof. Any mechanical hardware must be prevented from causing a spark, as well as the occupant who must be restrained from causing an explosion. The concentration of the gas at the generator or at its source (the inert carrier in the case of Zyklon B) is almost 100%, much greater than its 6% lower explosion level (lel).

8.004 Either the gas is to be generated, supplied from tanks or supplied from an inert carrier such as Zyklon B. If it is to be generated, mechanical means must be supplied to drop sodium cyanide into an acid solution. If it is to be supplied from tanks, a heated water jacket must be used to vaporize it from a liquid (its form in the tank). If Zyklon B is to be used, a hot air circulator must be employed to evaporate the gas (boil it off) from the inert carrier. The simplest means is to generate the gas in the chamber. If we used tanks, the heater and the valves must all be explosion proof. If Zyklon B is utilized, we need an expensive circulator, piping system, additional seals on the chamber and the pump and, further, must be concerned with possible gas leaks outside the chamber proper. Further, we must see that the heater never causes an electrical spark.

8.005 We must have a system for exhausting the air-gas mixture from the chamber and a stack above the tallest object to dissipate the gas before it can harm anyone. This requires an inlet valve and an exhaust valve, both gasketed, and an exhaust fan capable of sufficient flow to clear the chamber a number of times in a short span of time. The intake air must be heated to a temperature of greater than 78.3 degrees Fahrenheit (25.7 Celsius) to prevent condensation of the hydrocyanic acid in the chamber. We must add a strong base to the intake air to neutralize any leakage backwards to the operators.

8.006 After the usage, we must have a system or procedure to neutralize the executee's body of hydrocyanic acid and to purge the chamber of the same. This requires the washing of the subject, as well as the chamber, with a strong base while wearing protective suits and gas masks or air supplies. Further, we must have some type of indicator for gas leakage, as well as an air exhaust system to protect the operators. We require special hydrogen cyanide medical kits, resuscitators and doctors trained to handle an emergency. We must restrict the hydrogen cyanide gas and the residual prussic acid or Zyklon B carrier from unsuspectingly coming into contact with the operation.

9.000 CONCLUSION.

The reader of this report should be able to immediately grasp the necessity for the utilization of these tried and tested principles for a lethal gas chamber design. Most of them are common sense. Even though the execution requirements only existed in the United States, we can immediately see that the Germans utilized these criteria in the design and construction of the DEGESCH Delousing Chambers for Zyklon B. These were used only for pest and disease control.

9.001 If the readers of this report simply apply these basic common sense design requirements to the alleged German Homicidal Gas Chambers in Poland, or elsewhere, they can immediately see the absurdity of considering these facilities as being gas chambers. It has been said that the United States chambers cannot be compared with the alleged German chambers because the problems encountered in executing two people are different from those encountered in executing hundreds. Not so. The problems are essentially the same, only greater and more dangerous. The larger the chamber and the greater the number of executees, the greater is the need to apply the basic design principles. Only a fool would attempt to execute one or more

persons in a cold damp morgue such as the alleged Gas Chamber at Auschwitz I.
Perhaps a dead fool.

Prepared this 6th day of December, 1989 at Malden, Massachusetts.

Fred A Leuchter Associates, Inc.

[Signed]

Fred A. Leuchter, Jr.

Expert in Execution Technology

FAL/cal

Appendix

[The following is the text of the Eaton Proposal for the Mississippi Lethal Gas Chamber]

SPECIFICATIONS LETHAL GAS CHAMBER

1 CHAMBER

Chamber shall be of hexagon shape, fabricated from steel plate conforming to A.S.T.M. Specifications No. A-283, Grade "C" of sufficient thickness to withstand the pressure of the generated gas and the vacuum induced by the exhaust fan. Chamber to be complete with necessary windows and door, gas generating equipment, proper neutralizing equipment, execution chair, valves, and all necessary accessories to insure a positive and rapid execution without danger to operators or witnesses.

2 GAS GENERATING EQUIPMENT

A self-contained hydrogen Cyanide generator, equipped with all necessary valves, levers, pressure gauge, etc., for introducing and controlling the flow of the generated gas into the chamber. Complete with necessary neutralizing agent inducing equipment properly attached so that exhaust gas generating materials can be flushed out of the generator, with water into the sewer connection after execution has been completed. All the above to be directly beneath the chamber, in a basement room, provided by the Purchaser.

3 CHAIR

Chamber shall be equipped with suitable chair provided with proper arm and leg shackle attachments for securing prisoner in proper position in chair.

4 GAS NEUTRALIZING EQUIPMENT

Chamber shall be equipped with proper ventilation including manifold, with special ports spaced at proper intervals to insure rapid admission of a neutralizer vapor into the chamber through a controlled system of valves.

5 EXHAUST FAN AND INSIDE CHAMBER LIGHTING

Chamber to be equipped with a high volume, electrically driven exhaust fan capable of completely exhausting the chamber in 90 seconds. Fan mounting to be complete with quick acting large area exhaust valve with controls to operating point. Inside lights to be vapor proof, of sufficient size to properly flood chamber.

6 WINDOWS AND DOORS

Installed in the walls of the chamber shall be five windows of bullet proof glass. One window at the executioner's station and four windows located in the witness room. All

windows to be properly gasketed so that they will be gas tight. A quick acting bulkhead type door shall be furnished with special designed hinges and locking hardware to insure continuous gas tight operation without damage to gaskets. All gaskets (windows and doors) shall be impervious and resistant to the generated gas and shall fit into the retainer frame so as to insure perfect alignment and tightness, regardless of temperature changes.

7 OPERATING CONTROLS

All operating controls, including switches, venturi tube, etc., shall be brought to a point near the executioner's window for convenient and positive operation.

8 PAINTING

Interior to be painted with a metallic, acid resisting, light color paint.

9 UTILITIES

Chamber enclosure building, including all necessary electric power, water, and sewer connections, will be furnished by the Purchaser.

10 TEST AND ACCEPTANCE

Chamber must be properly tested in presence of the Warden, and proven effective and safe.

PRELIMINARY TESTING

To be assured of tightness of fluid service lines and gas generator bowl first observe Drawing A-2249 attached.

Now open completely valves 3 and 4. Then turn on water at spigot above mixing vat 9 and allow water to run through the system for about 5 minutes. This will insure that the lines are clear from the mixing vat to the generator in the bottom of the chamber and that the drain from the gas generator to the sewer is perfectly clear.

Then close valve 3 which shuts off the line to the sewer, allowing the water to fill the generator to chamber floor level. Then enter pit beneath chamber and examine all lines, as well as bottom of the generator to be sure that all piping is tight.

Then close valve 10 while water is still at floor level.

Then open valve 3 and allow water underneath valve 10 to drain to sewer, trapping the water above valve 10.

Then close chamber tightly, including exhaust valve 2, putting a little water around exhaust valve 2 to insure tightness, and start exhaust fan, opening valve 5 in top of chamber, thereby pulling vacuum on chamber where it can be observed whether there is any chance of gas leakage around valve 10 in bottom of chamber. If a constant vacuum is shown on vacuum gauge 6, this assures that the chamber is tight in every respect.

After chamber has been proven tight, and just before an execution, the following procedure should be accomplished: At least two gallons of distilled water should be flushed through the system by pouring it into mixing chamber 9 and allowing it to run through to fill up traps in the piping system.

Then valve 3 should be closed permanently and valve 4 should be closed to hold back the acid and distilled water which will be mixed in the mixing chamber 9.

Valve 10 should be in the closed position and the cyanide should be placed in the receptacle above valve 10 just prior to the time the victim is placed in the chamber.

The acid should be mixed into the distilled water at the time the death sentence is being read to the victim, for the reason that better results are obtained in the generation of gas from the hot acid and water mixture.

As the victim is being strapped into the chamber, valve 4 should be opened allowing the mixed acid and water to drop into the generating chamber. When all the mixed acid and water has dropped into the generating chamber, valve 4 should then be closed tightly and the mixing chamber 9 should be filled entirely with water from the spigot above this mixing chamber. Ammonia chambers, which have been previously filled, then should be put in readiness for operation. It is, of course, understood that valve 2 which is the intake valve, should be closed at all times, with the exception of when exhausting the chamber after the execution has been completed.

Sheet # 2

With the ammonia injectors ready, with valves 3 and 4 closed, with the acid in the bottom of the gas generator, and with the cyanide in the container above valve 10, the victim in the chair and the door properly closed and sealed, the chamber is ready to perform the execution. Valve 5 should be closed and the fan running. All that is left to do is pull lever 1, which opens valve 10 above the gas generator, allowing the cyanide to drop into the acid. You then immediately get gas.

Have the operator constantly watch the vacuum gauge 6 to be sure that during the time of the execution the chamber is under vacuum.

When it has been determined that the victim has expired, then lever 1, operating valve 10, should be put in the closed position thereby isolating further gas going into the chamber.

Then valve 5 is to be opened wide, then valve 2 is to be opened wide, and the ammonia injector No. 7 opened into the intake passage to neutralize the gas and raise it into the exhaust. The chamber should be completely cleared within one minute.

While the exhausting of the gas in the chamber is being accomplished, valve 3 is to be opened allowing the acid and the residue from the cyanide to pass into the sewer.

Valve 4 is immediately opened after valve 3, allowing the water which has been placed in mixing chamber 9 to drop into the gas generator, flushing same completely through to the sewer. In flushing this water through it is, of course, understood that the ammonia injector in the mixing room be opened into the flush line to go through

the system with the flush water. The water valve above the mixing pot can be opened to accomplish continual flushing during the same period of time as the chamber is being exhausted.

If there is to be two or more executions simultaneously, it should be noted that after the flushing with ordinary water which has had ammonia contained in it, should be completely flushed out of the system by a repeat of the flushing of the system with distilled water to eliminate ordinary water with ammonia which will be caught in the traps.

The second execution can be accomplished by repeating the procedure for the first operation.

For record purposes, the amount of distilled water required is 6 quarts. The amount of acid is 6 pints. The amount of cyanide is 16 ounces, and the cyanide should be in 1/2 oz. pellets.

After each execution the inside of the chamber should be thoroughly washed down and allowed to dry out, and the door gasket should be greased with vaseline. Valves 3 and 4 should be left in the open position.

This, we believe, covers the full testing, operational and final cleanup of this apparatus.

In terms of weight the total mix in mixing bowl and trap combined will then be:
Water in trap, 40 oz. 2.5# Measured water to mixing bowl 9.5# Measured acid to mixing bowl 7.0# Total 19.0#

Concentration 7.3 equals 37.5% 19.0#

Prior to the actual execution the water and acid should be measured out and held in separate containers ready to mix together in the acid mixing hopper. The actual mixing is to be done 10 minutes prior to the time it must be released to the chamber acid receptacle.

In a single execution one mix shall be used and released to the receptacle, under the particular chair to be used. In a double execution two mixes shall be used and released to the receptacles under each of the two chairs.

2. Sodium Cyanide - One pound of sodium cyanide shall be used with each acid mix. In a single execution one pound of sodium cyanide in appropriate gauze bag shall be immersed in the receptacle under the particular chair used. In a double execution one pound of sodium cyanide in appropriate gauze bag shall be immersed in the receptacle under each of the two chairs.

RULES FOR OPERATION OF CHAMBER Preliminary preparation:

1. Inspect thoroughly and test the chamber and all piping above and below floor.
2. Assign operatives to duties and rehearse so that each is absolutely familiar with his duties.

3. Measure the distilled water and acid required for the execution and place in separate containers ready for actual use. **DO NOT MIX ACID AND WATER AT THIS TIME. USE RUBBER GLOVES IN HANDLING ACID.**
4. Place sodium cyanide in gauze sack properly tied and ready to attach to chair. **PUT AWAY IN A CONVENIENT PLACE TO ELIMINATE DANGER UNTIL NEEDED. KEEP AWAY FROM ACID.**
5. Fill ammonia containers for air flushing and water flushing systems with ammonia.
6. Turn on all necessary lights in chamber and rooms to be used in connection with execution.
7. Turn on ventilation fans for witness areas.
8. Turn on chamber exhaust fan.
9. See that chamber exhaust valve 3 is closed.

Illustrations

Mississippi Death House



Gas Chamber Door



Gas Chamber Chair



The Lethal Gas Chamber



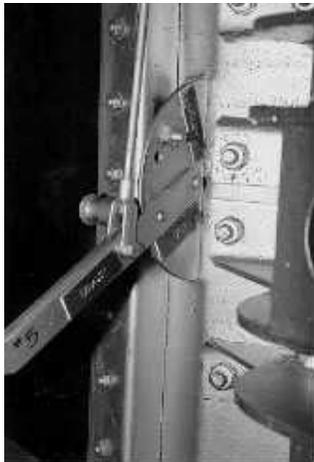
**Welded and riveted
steel construction**



Control Room



**Ammonia
injection
system**



Exhaust



**Sodium cyanide
pellet control**

Gas Chamber Control Room

