

Dutchess Community College

Confined Space Entry Program

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PURPOSE:

This program is designed to comply with 29 CFR 1910.146 – Permit Required Confined Spaces.

The purpose of this written program is to delineate practices and procedures to protect Dutchess Community College employees from the hazards of entry into permit required confined spaces. This program will enable employees to understand the requirements of 29 CFR 1910.146, recognize potential hazards related to confined space entry, and take appropriate actions/precautions.

In accordance with paragraph (c) of the standard (General Requirements) Dutchess Community College has conducted a workplace evaluation, hazard determination, employee training program, and this written program.

Definitions:

Acceptable entry conditions means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit – required confined space entry can safely enter into and work within the space.

Attendant means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

Authorized entrant means an employee who is authorized by the employer to enter a permit space.

Blanking or blinding means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined space means a space that:

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.) and
- (3) Is not designed for continuous employee occupancy.

Double block, and bleed means the closure of a line, duct, or pipe by closing and locking or tagging two inline valves and by opening and locking or tagging a drain or vent in the line between the two closed valves.

Emergency means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry permit (permit) means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in paragraph (f) of 29CFR 1910.146

Entry supervisor means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes;

- (1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL) ;
- (2) Airborne combustible dust at a concentration that meets or exceeds its LFL;
- (3) Atmospheric concentration below 19.5 percent or above 23.5 percent;
- (4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this part and which could result in

employee exposure in excess of its dose or permissible exposure limit;

- (5) Any other atmospheric condition that is immediately dangerous to life or health.

Hot work permit means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately dangerous to life or health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Inserting means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Isolation means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lock out or tag out of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line breaking means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Non-permit confined space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Oxygen deficient atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere means an atmosphere containing more than 23.5

Permit-required confined space (permit space) means a confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere:
- (2) Contains a material that has the potential for engulfing an entrant:
- (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section: or
- (4) Contains any other recognized serious safety or health hazard.

Permit required confined space program (permit space program) means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Permit system means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited condition means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue service means the personnel designated to rescue employees from permit spaces.

Retrieval system means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Testing means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Workplace Evaluations:

Potential Permit Required Confined Spaces shall include but not be limited to:

Structures – any structure greater than 5' in span and greater than or equal to 60" in diameter which may be entered for inspection, repairs, etc.

Culverts - any structure greater than 30" wide by 30" high, and less than 60" in diameter or 60" span as the latter is described under the above. Culverts smaller than described shall not be entered.

Catch basins and /or manholes – any structure greater than 4' in depth and wide enough such that an employee can bodily enter to perform a work task.

Trenches and excavations – any open excavation or trench with a depth greater than 4' that an employee can bodily enter to perform a work task.

Boilers – where large enough and configured as such to permit entry for cleaning, inspection, etc.

Cooling Towers – where large enough and configured as such to permit entry for cleaning, inspections, etc.

Crawl Spaces – minimum 30" in height or width. (Smaller spaces shall not be entered).

Tanks – where large enough and configured as such to permit entry for cleaning, inspection, etc.

Underground Vaults – ie. Electrical service and natural gas service.

POLICY:

Dutchess Community College employees shall not enter permit required confined spaces.

PROCEDURES:

Note: When determining the procedures to be used in this program, Flowchart A may be used as a guide.

Non-Permit Confined Spaces

Prior to employee entry into a confined space, the entry supervisor shall determine whether the space has known or potential hazards using Appendix A - the Confined Space & Permit Required Confined Space Recognition Form. If the entry supervisor determines that no known or potential hazards exist in the space, the space is not a permit required confined space and may be entered for work tasks provided that the work to be performed will not introduce a hazard into the confined space. Should there be any doubt about the adequacy of the atmosphere in the space; air monitoring results will be obtained to ensure a hazard does not exist. Appendix B -Form A-1 shall be used as a certification that the space is not permit required. Should the entry supervisor determine that hazards or potential hazards exist, the space shall be deemed permit required and will not be entered.

Reclassification from Permit to Non –Permit

Should the entry supervisor determine that hazards or potential hazards exist in the confined space, provided the space poses no accrual or potential atmospheric hazards and if all other hazards or potential hazards can be eliminated without entry into the space, the hazards are to be eliminated and the space shall be reclassified as a non-permit required confined space for such a time as the hazards remain eliminated. The entry supervisor shall document the basis for determining that all hazards have been eliminated through a certification that contains the date, location of

the space, and the signature of the person making the determination. Appendix B - Form A-1 shall be used for this certification. This certification shall be made available to each employee entering the space. ** Note: If hazards arise within a permit space that has been reclassified to a non-permit space, employees shall exit the space and determine whether it must be reclassified as a permit space.*

Alternate Procedures

Should the entry supervisor determine that the ONLY hazard posed by the confined space is an actual or potentially hazardous atmosphere; the following alternate procedures shall be used:

1. Continuous forced air ventilation shall be utilized to maintain a safe atmosphere for as long as the space will be occupied. ** Note: The entry supervisor will develop and document monitoring and inspection data that supports the statement that the space is safe. Said data shall be made available to each employee who enters the space.*
2. If applicable, any conditions making it unsafe to remove the entrance cover shall be eliminated before the cover is removed.
3. When entrance covers are removed, the opening shall be guarded by a railing, temporary cover, or other barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
4. Before an employee enters the space, the internal atmosphere shall be tested with a direct-reading instrument, for the following conditions in the following order:
 - a) Oxygen content
 - b) Flammable gases and vapors
 - c) Potentially toxic air contaminants
5. There shall be no hazardous atmospheres within the space whenever an employee is inside the space.
6. Continuous forced air ventilation shall be used as follows:

- a) Employees will not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- b) Ventilation shall be directed to the immediate areas where employees are and shall continue until all employees have left the space.
- c) Air supply from the ventilation shall be from a clean source.

7. The atmosphere within the space shall be periodically tested as necessary to ensure that the forced ventilation is preventing the accumulation of a hazardous atmosphere.

8. If a hazardous atmosphere is detected during entry/occupation

- a) All employees shall exit the space immediately.
- b) The space shall be evaluated to determine how the hazardous atmosphere developed
- c) Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

9. The entry supervisor shall verify that the space is safe for entry through a written certification that contains the date, location of the space, and the signature of the person providing the certification. Appendix C - Form A-2 shall be used for these purposes. The certification shall be made before entry and shall be made available to each employee entering the space.

10. When there are changes in the use or configuration of a non-permit confined space that might introduce hazards to the entrants, the space will be reevaluated and if necessary, reclassified as a permit required confined space.

TRAINING:

All entrants and permit signers (entry supervisors) will receive appropriate instruction in the confined space entry program prior to entry into confined spaces. The training will include knowledge of the hazards involved, the

precautions necessary for safe entry and procedures to work safely in and around confined spaces.

The training will include as a minimum:

- Hazard identification and recognition
- Hazard control and space isolation technique
- Safe work practices
- Procedures for use of entry checklists and certifications
- Sampling instrument calibration
- Atmospheric test results interpretation
- Recognition of signs and symptoms of exposure to a hazard
- Procedures for dealing with unauthorized personnel in or near confined spaces
- Procedures for terminating or concluding entry operations
- Lock out and tag out procedures

The method of approach of training is determined by the previous experience and skills of the employee, with the exception of a newly hired person who should receive a complete and thorough orientation.

Retraining will be performed whenever a periodic review reveals or whenever a department head and/or supervisor has reason to believe that there are inadequacies in the employee's knowledge or use of the confined space entry procedure. The retraining will reinforce employee knowledge and introduce new or revised control methods and procedures.

Appendix D - the certification of training form A-3 will be completed for each employee authorized to work in confined space operations. A copy of this form will be in the employee's permanent records.

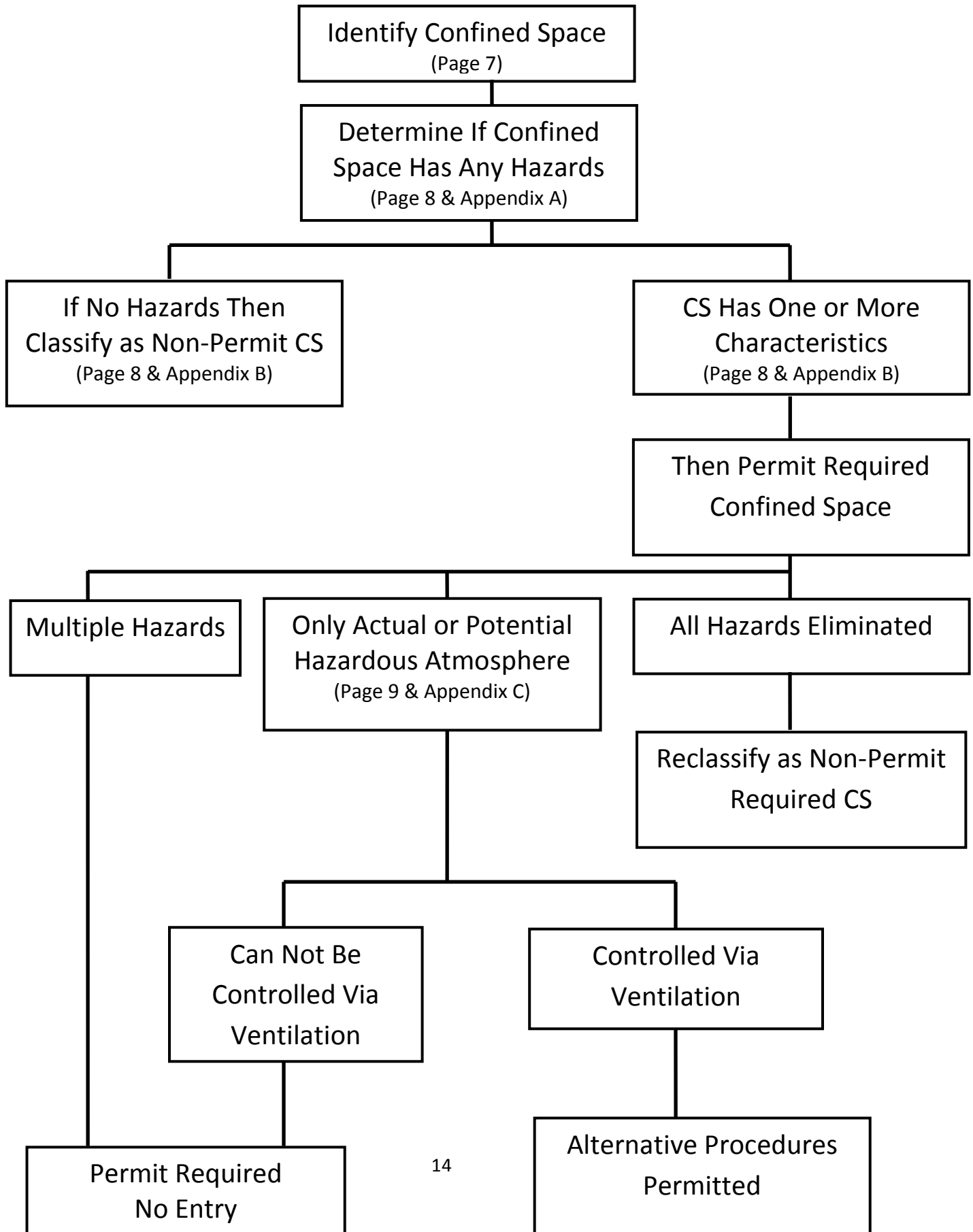
CONTRACTOR COORDINATION:

When Dutchess Community College arranges to have a contractor perform work that involves permit space entry, Dutchess Community College will:

1. Inform the contractor that the workplace may contain permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting PESH/OSHA requirements.
2. Appraise the contractor of the requirements, including the hazards identified and Dutchess Community College's experience with the space; that makes the space in question a permit space.
3. Appraise the contractor of any precautions or procedures that Dutchess Community College has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
4. Coordinate entry operations with the contractor, when both Dutchess Community College personnel and contractor personnel will be working near permit spaces.
5. Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall conform to sections 29CFR 1910.146(c) (9) (i) through the end.

Flowchart A



Appendix A

Confined Space & Permit Required Confined Space Recognition Form

Part 1

Yes No

- | | | |
|--|--------------------------|--------------------------|
| 1) Is the space large enough so an employee can bodily enter and perform work? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2) Does the space have limited or restricted means for entry and exit? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3) The space has not been designed for occupancy? | <input type="checkbox"/> | <input type="checkbox"/> |

NOTICE: IF THE ANSWER IS YES TO ALL ITEMS IN PART 1 CONTINUE TO PART 2. IF THE ANSWER IS NO TO ANY OF THE ABOVE ITEMS, THE SPACE IS NOT CONSIDERED A CONFINED SPACE AND NO FURTHER ACTION IS NEEDED.

Part II

- | | | |
|--|--------------------------|--------------------------|
| 1) Does the space contain or potentially contain a hazardous atmosphere? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2) Does the space contain any chemicals or chemical residues? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3) Does the space contain any flammable/combustible Substances? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4) Does the space contain or potentially contain any decomposing organic matter? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5) Does the space have any pipes which bring chemicals into it? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6) Does the space have any materials that can trap, engulf, or drown the entrant? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7) Is vision obscured by dust at 5' or less? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8) Does the space contain any mechanical equipment servicing the space? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9) Does the space have converging walls, sloped floors or a tapered floor to smaller cross-sections which could trap or asphyxiate an entrant (entrapment hazard)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10) Does the tank or vessel contain rusted interior surfaces? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11) Does the space contain thermal hazards (e.g.: extreme hot or cold)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12) Does the space contain excessive noise levels which could interfere with communication with an attendant? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13) Does the space present any slip, trip, or fall hazards? | <input type="checkbox"/> | <input type="checkbox"/> |
| 14) Are there any operations conducted near the space opening which could present a hazard to entrants ? | <input type="checkbox"/> | <input type="checkbox"/> |
| 15) Are there any hazards from falling objects? | <input type="checkbox"/> | <input type="checkbox"/> |

- 16) Are there lines under pressure servicing the space?
- 17) Are cleaning solvents or paints going to be used in the space?
- 18) Is welding, cutting, brazing, riveting, scraping, or sanding going to be performed in the space?
- 19) Is electrical equipment located in or required to be used in the space?
- 20) Does the space have poor ventilation which would allow an atmospheric hazard to develop?
- 21) Are there any corrosives which could irritate the eyes in the space?
- 22) Are there any conditions which could prevent any entrants' self-rescue from the space?
- 23) Are there any substances used in the space which have acute hazards?
- 24) Is mechanical ventilation needed to maintain a safe environment?
- 25) Is air monitoring necessary to ensure the space is safe for entry due to a potential hazardous atmosphere?
- 26) Will entry be made into a diked area where the dike is 5' or more in height?
- 27) Are residues going to be scraped off the interior surfaces of the vessel?
- 28) Are non-sparking tools required to remove the residues?
- 29) Does the space restrict mobility to the extent that it could trap an entrant?
- 30) Is respiratory protection required because of a hazardous atmosphere?
- 31) Does the space present a hazard other than those noted above which would make it a permit space?

Location of Space _____

Entry Supervisor Signature _____ Date _____

Name (please Print) Title

Additional Notes:

Appendix B

Form A-1 Certification

1) Permit space location _____

- | | Yes | No |
|---|--------------------------|--------------------------|
| 2) Have employees received permit space training? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3) A. Are any hazardous atmospheres present or potentially present? | <input type="checkbox"/> | <input type="checkbox"/> |
| B. Is continuous forced air ventilation needed to maintain acceptable levels? | <input type="checkbox"/> | <input type="checkbox"/> |
| C. Is air monitoring required? If yes, record test results. | <input type="checkbox"/> | <input type="checkbox"/> |

Air Test Results (If Applicable)

<u>Tests</u>	<u>Acceptable Levels</u>	<u>Pre Entry Results</u>
Oxygen	19.5 – 23.5	_____
L.E.L	Under 10%	_____
Explosive Dust	<LFL (5' Visibility)	_____
Carbon Monoxide	35 PPM	_____
Hydrogen Sulfide	Under 10 PPM	_____

NOTE: IF HAZARDOUS ATMOSPHERES ARE PRESENT OR VENTILATION IS NEEDED TO CONTROL LEVELS, THEN RECLASSIFYING THE SPACE IS NOT POSSIBLE. IT IS NECESSARY TO ELIMINATE THE ATMOSPHERIC HAZARD TO RECLASSIFY. SEE FORM A-2

- | | Yes | No |
|--|--------------------------|--------------------------|
| 4) Is an engulfment hazard present?
If yes, what control measure is used to eliminate the hazard?

_____ | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | |
|--|--------------------------|--------------------------|
| 5) Is there an entrapment hazard?
If yes, what control measure is used to eliminate the hazard?

_____ | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|

- 6) Have all hazardous energy sources (including chemical and physical Hazards) been eliminated? Check isolating methods used to eliminate the hazard(s) **Yes** **No**
- De-energize equipment
 - Locking out electrical circuits and related training provided
 - Tagging out electrical circuits and related training provided
 - Physically block machinery so it cannot move
 - Blank or blinds
 - Double blank and bleed
 - Lock and/or tag out valves
 - Disconnecting lines
 - Other _____

NOTE: THE ABOVE HAZARDS MUST BE ELIMINATED FROM OUTSIDE OF THE SPACE. IF ENTRY INTO THE SPACE IS NECESSARY TO CONFIRM THAT THE HAZARDS ARE ELIMINATED, THE SPACE IS PERMIT REQUIRED AND WILL NOT BE ENTERED BY EMPLOYEES.

- 7) Have all employees who will enter the reclassified space been instructed to immediately evacuate the space if a hazard is detected?
 If not, instruct employees. **Yes** **No**
- 8) Will the space be reclassified back to a permit space if the need arises?
- 9) Have all employees participating in the entry operation had an opportunity to review this safe entry certification form?

Entry Supervisor Signature _____ Date _____

Name (Please Print) _____ Title _____

Appendix C

Form A-2 Certification

Alternate procedures may be used when the only hazard present is an actual or potential hazardous atmosphere. The entry will be made only when continuous forced air ventilation is sufficient to maintain a safe permit space. If a hazardous atmosphere is detected during entry, each entrant will leave the space immediately.

1) A. Permit space location: _____

B. What is the size (volume) and configuration of space? _____

2) A. Have employees received permit space training? Yes No

B. Has the certifier/supervisor received confined space training?

3) A. What tasks are to be performed during the entry operation? _____

B. Is a hazardous atmosphere the only hazard of concern?

If no, alternate procedures cannot be used.

4) Does the atmospheric hazard in the space have the potential to create high temperatures or high pressures?

If yes, take appropriate action before removing cover.

5) Are conditions safe to remove cover?

If no; removal is prohibited.

6) After cover removal, is opening properly guarded?

List guarding methods _____

7) A. Continuous forced air ventilation provided?

If no, explain why _____

If yes, what is the capacity (CFM) air exchange rate? _____

B. Minimum ventilation duration prior to entry _____

Continue to ventilate space during entry.

8) Air Test Results

<u>Tests</u>	<u>Acceptable Levels</u>	<u>Pre Entry Results</u>
Oxygen	19.5 – 23.5	_____
L.E.L	Under 10%	_____
Explosive Dust	<LFL (5' Visibility)	_____
Carbon Monoxide	35 PPM	_____
Hydrogen Sulfide	Under 10 PPM	_____

9) Does inspection of interior have to be conducted to see if other hazards exist? **Yes** **No**

If yes, space is permit required. Entry not permitted.

10) A. Is frequent or periodic testing performed?

If no, explain why _____

B. Who will be performing monitoring? _____

11) A. If a hazardous atmosphere is detected during entry/occupation have employees been instructed to evacuate immediately?

B. Is there a procedure to reevaluate the space if a hazardous atmosphere develops?

Describe procedure _____

C. Have steps been taken to prevent employees from re-entering the space until it is proven safe?

List steps _____

12) Have employees had the opportunity to review the data to support use of alternate procedures?

Entry Supervisor Signature _____ Date _____

Name (Please Print) Title

Appendix D

Form A-3 Confined Space Entry Certification of Training

Dutchess Community College has provided proper training to the below listed employee for the understanding, knowledge and skills necessary for the safe performance of duties assigned concerning confined space entry.

Employee _____

Employee # _____

Trained as an **Authorized Entrant** by: _____

Date: _____

Trained as an **Entry Supervisor** by: _____

Date: _____

Trained in the use of the following gas detectors:

Brand _____ Model _____ Date _____

Brand _____ Model _____ Date _____

Brand _____ Model _____ Date _____

Employee Signature _____

The original certification will remain in the Personnel File of the employee.

One copy of this certification will be on the job and available for inspection as required.