

## PART B REVIEW CHECKLIST

### SECTION D - PROCESS INFORMATION - TANK STORAGE AND/OR TREATMENT

Last updated: February 2005

<b>Facility/ID #</b>		<b>Date</b>	
<b>Reviewer</b>		<b>DO</b>	

Relevant Guidance Documents: [Tank System Requirements Advisory](#) (10/1997)

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
D-2 <u>Tank Systems</u>						
D-2a <u>Applicability: Tank systems - Exemptions from Tank System Requirements</u> OAC 3745-55-90						
Does the owner/operator claim any of the following (Owner/Operator must submit documentation to support any claim their tank system is exempt from any tank system requirements.):						
(1) Does the owner/operator have tanks that store or treat hazardous waste that contains no free liquid (material must meet requirements found in Method 9095 (Paint Filter Liquid Test) as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA Publication no. SW-846) and show that such tanks are situated inside a building with an impermeable floor? (If yes, then tanks are exempted from the secondary containment requirements in OAC 3745-55-93.)						
(2) Does the owner/operator have tank systems, including sumps, that serve as secondary containment to collect or contain releases of hazardous wastes? (If yes, those tank systems are exempt from OAC 3745-55-93 (A) requirements.)						

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(3) Does the owner/operator have tank systems, sumps, or other such collection devices or systems used in conjunction with drip pads, as defined in OAC 3745-50-10 and regulated under OAC 3745-57-80 to 3745-57-85? (If yes, those systems must meet the requirements of OAC 3745-55-90 to 3745-55-99.)						
D-2b <u>Tank System Description</u> OAC 3745-50-44 (C)(2)(b),(d)						
Does the application provide a description of the type of tank (i.e., aboveground, underground), material of construction, volume, and number of tanks, as well as the specific location of each tank?						
Are the dimensions, capacity and shell thickness of each tank provided?						
Is a diagram of piping, instrumentation and process flow for each tank system provided?						
D-2c <u>Written Assessment</u>						
D-2c(1) <u>Existing Tanks - Assessment of Tank System's Integrity</u> OAC 3745-50-44 (C)(2)(a) and 3745-55-91 (see definition for existing tanks in OAC 3745-50-10)						
Does the application include documentation that the tank system is not leaking or unfit for use?						
If the tank system is found to be leaking or unfit for use, the owner or operator must comply with OAC Rule 3745-55-96.						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
Does the application include a written assessment, reviewed and certified by an independent, qualified, registered professional engineer, attesting to the structural integrity and suitability of each tank system for handling hazardous waste?  At a minimum, does this assessment consider the following:						
(1) design standard(s), if available according to which the tank and ancillary equipment were constructed?;						
(2) hazardous characteristics of the wastes that have been and will be handled?;						
(3) existing corrosion protection measures (discussion regarding internal and external corrosion protection measures and corrosion allowance for the service life of the tank should be included)?;						
(4) documented age of the tank system, if available (otherwise, an estimate of the age, manufactured date)?; and						
(5) results of a leak test, internal inspection, or other tank integrity examination (non-enterable underground tanks must have a leak test, other tanks may use integrity tests other than a leak test, that addresses cracks, leaks, corrosion and erosion, and is certified by an independent, qualified, registered professional engineer in accordance with paragraph (D) of rule 3745-50-42.  Note: The practices described in the "American Petroleum Institute" publication, "Guide for Inspection of Refinery Equipment," chapter XII, "Atmosphere and Low-Pressure Storage Tanks," fourth edition, 1981, may be used, where applicable, as guidelines in conducting other than a leak test.						

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	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
D-2c(2) <u>New Tanks - Assessment of Tank System's Integrity</u> OAC 3745-50-44 (C)(2)(a) and 3745-55-92(A)						
Does the permit application provide a written assessment that is reviewed and certified by an independent, qualified, registered professional engineer, in accordance with OAC Rule 3745-50-42(D), that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail? At a minimum, does this assessment consider the following:						
(1) Design standard(s) according to which tank(s) and/or the ancillary equipment are constructed?;						
(2) Specification of hazardous characteristics of the waste(s) to be handled?;						
(3) For systems or components in which the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or water, does the assessment include a determination by a corrosion expert of the following:						
(a) Factors affecting the potential for corrosion such as soil moisture content, soil pH, soil sulfides level, soil resistivity, structure to soil potential, influence of nearby underground metal structures (e.g., piping), existence of stray electric current and existing corrosion protection measures (e.g., coating, cathodic protection)?						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
<p>(b) The type and degree of external corrosion protection that are needed to ensure the integrity of the tank system during the use of the tank system or component, consisting of one or more of the following:</p> <ul style="list-style-type: none"> <li>(1) corrosion-resistant materials of construction such as special alloys, fiberglass-reinforced plastic, etc.;</li> <li>(2) corrosion-resistant coating (such as epoxy, fiberglass, etc.) with cathodic protection (e.g., impressed current or sacrificial anodes); or</li> <li>(3) electrical isolation devices such as insulating joints, flanges, etc.?</li> </ul> <p>Note: The practices described in the “National Association of Corrosion Engineers (NACE)” standard, “Recommended Practice (RP-02-85)- Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems,” and the “American Petroleum Institute (API)” publication 1632, “Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems,” may be used, where applicable, as guidelines in providing corrosion protection for tank systems.</p>						
<p>(4) A determination of design or operation measures that will protect underground tank systems against potential damage due to vehicular traffic?;</p>						
<p>(5) Design considerations to ensure that tank foundations will maintain the load of a full tank and that tank systems will be anchored to prevent flotation or dislodgement where the tank system is placed in a saturated zone or is located within a seismic fault zone?; and</p>						
<p>(6) Design considerations to ensure that tank systems will withstand the effects of frost heave?.</p>						

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	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
<b>D-2d</b> <u>Description of Feed Systems, Safety Cutoff, Bypass Systems and Pressure Control (e.g., vents)</u> OAC 3745-50-44 (C)(2)(c)						
Is a description of tank transfer equipment used to safely transfer waste to storage or treatment tanks at the facility provided? The following should be considered (include diagrams of locations and type of control devices):						
(1) Are level sensors/alarms (for high levels) systems and transfer connections (fill pipe design, connections, couplings, check valves, etc.) for feed systems described?;						
(2) Are cutoffs/Bypass systems for overflow protection described?; and						
(3) Is pressure control relief provided and the location of the pressure-relief vents included (may be addressed in connection with ignitable/reactive/incompatible wastes)?						
<b>D-2e</b> <u>External Corrosion Protection</u> OAC 3745-50-44 (C)(2)(e) and 3745-55-92 (F)						
Are external corrosion protection measures used to ensure continued structural integrity and suitability of each tank system for handling hazardous waste described?						
If so, the application should answer the following questions:						
(1) Was information provided to describe the materials and equipment used for corrosion protection for the tank system?;						
(2) Was information showing that the corrosion protection is adequate in regards to factors found in D-2c(2) provided?; and						

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(3) Was information provided which states that installation of any field-fabricated corrosion protection system was/will be supervised by an independent corrosion expert?						
D-2f <u>New Tank Systems - Description of Plans and Procedures for Tank Installation</u> OAC 3745-50-44 (C)(2)(f), 3745-55-92(B)						
Does the application include a detailed description of how the new tank system(s) will be installed that includes:						
(1) Will an independent, qualified installation inspector or an independent, qualified, registered professional engineer inspect each new tank system prior to covering, enclosing, or placing a new tank system or component in use? If so, does the application describe that the inspection will determine if there is the presence of weld breaks, punctures, scrapes of protective coatings, cracks, corrosion and other structural damage or inadequate construction/installation (and all discrepancies shall be remedied before the tank system is covered, enclosed, or placed in use)?;						
(2) Does the application describe how the new tank systems or components that are placed underground and that are backfilled will be (or have been) provided with a backfill material that is a noncorrosive, porous, homogeneous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported?;						
(3) Does the application describe how all new tanks and ancillary equipment will be tested for tightness prior to being covered, enclosed, or placed in use?						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(4) Does the application state that repairs will be made if the tank system is found not to be tight and that repairs necessary to remedy the leak(s) in the system will be performed prior to the tank system being covered, enclosed, or placed in use?						
(4) Does the application describe how ancillary equipment will be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion or contraction?  <b>Note:</b> The piping system installation procedures described in "American Petroleum Institute (API)" publication 1615 (November 1979), "Installation of Underground Petroleum Storage Systems," or ANSI standard B32.3, "Petroleum Refining Piping," and ANSI standard B32.4, "Liquid Petroleum Transportation Piping System," may be used, where applicable, as guidelines for proper installation of piping systems.						
(5) Does the application state that the owner or operator will obtain and keep on file at the facility written statements by those persons required to certify the design of the tank system in accordance with the requirements of OAC 3745-55-92 (B) through (F), that attest that the tank system was properly designed and installed and that repairs, pursuant to paragraphs (B) and (D) of OAC Rule 3745-55-92 were performed? These written statements shall also include the certification as required in paragraph (D) of OAC Rule 3745-50-42.						
D-2h <u>Containment and Detection of Releases</u> OAC 3745-55-93						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
Does the application indicate that secondary containment is/will be provided for:						
(1) All new tank systems or components, prior to their being put into service?;						
(2) All existing tank systems used to store or treat EPA hazardous waste numbers F020, F021, F022, F023, F026, and F027?;						
(3) Tank systems that store or treat materials that become hazardous wastes subsequent to January 12, 1987, within two years after the material becomes a hazardous waste?						
D-2h(1) <u>Requirements for Secondary Containment and Leak Detection</u> OAC 3745-55-93 (B) & (C) and 3745-50-44 (C)(2)(g)						
Does the application describe how the secondary containment system has been (will be) designed, installed and operated to prevent any migration of waste or accumulated liquid from the tank system to the soil, ground water, or surface water at any time during the use of the tank system, and that the secondary containment system can detect and collect releases and accumulated liquids performed?						
In order to meet the requirements of the above paragraph, does the application describe:						
(1) How the secondary containment system is constructed of or lined with materials that are compatible with the waste(s) to be placed in the tank system?						
(2) That the secondary containment system has sufficient strength and thickness to prevent failures caused by any of the following:						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(a) pressure gradients (including static head and external hydrological forces)?;						
(b) physical contact with the wastes (Compatibility, Corrosion)?;						
(c) climatic conditions (Discussion regarding UV, frost heave, precipitation, etc.)?; and						
(d) stress of daily operation (including stresses from nearby vehicular traffic)?						
(3) Calculations to show that the secondary containment system is placed on a foundation or base that is capable of:						
(a) providing support?;						
(b) resisting pressure gradients above and below the system?; and						
(c) preventing failure due to settlement, compression, or uplift?						
(4) Is a description and detailed plan of the leak detection system provided, including the following:  (NOTE: Daily inspections may constitute acceptable form of leak detection monitoring. Reviewer can refer to OSWER Policy Directive 9483.00-3, 10/2/87 and RCRA Permit Policy Compendium 9483.1988 (08) for assistance.)						
(a) its operating principle?;						
(b) design features?; and						
(c) operating procedures?						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
<p>(5) Does the application include a detailed plan and description that the leak detection system will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours?; <i>OR</i></p> <p>Is it shown that the prevailing site conditions or detection technologies will not allow detection of a release within 24 hours? If so, can the owner/operator</p>						
<p>(a) specify the earliest practical time that detection can take place?; and</p>						
<p>(b) indicate why this longer period does not pose a threat to human health and the environment?</p>						
<p>(6) Does the application show how the secondary containment system is sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills or precipitation?</p>						
<p>(7) Is documentation provided on how it will be ensured that spilled or leaked wastes and precipitation will be removed from the secondary containment system within 24 hours? <i>OR</i></p> <p>(a) Are details provided on why wastes and precipitation cannot be removed within 24 hours, and the earliest practice time that removal can take place and how it will take place?; and</p> <p>(b) Is it demonstrated why this longer period does not pose a threat to human health and the environment?</p>						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
D-2h(2) <u>Secondary Containment Devices: Requirements for External Liner, Vault, Double-Walled Tank or Equivalent Device</u> OAC 3745-50-44 (C)(2)(g) and 3745-55-93 (D) & (E)						
Does the application indicate that secondary containment for each tank includes at least one of the following:						
(1) a liner external to the tank?,						
(2) a vault?,						
(3) a double-walled tank?, or						
(4) an equivalent device approved by the director?						
For each external liner system (e.g., concrete dike), does the application include the following information:						
(1) Calculations to show that the external liner system is designed or operated to contain 100 percent of the capacity of the largest tank within its boundary?						
(2) A demonstration that the external liner system is designed or operated to prevent run-on or infiltration of precipitation? OR  A demonstration that the collection system has sufficient excess capacity to contain run-on and precipitation from a 25-year 24-hour rainfall as well as 100 percent of the capacity of the largest tank within its boundary?						
NOTE: For 25-year, 24-hour rainfall information, see <a href="http://hdsc.nws.noaa.gov/hdsc/pfds/orb/oh_pfds.html">http://hdsc.nws.noaa.gov/hdsc/pfds/orb/oh_pfds.html</a> OR <a href="http://www.nws.noaa.gov/oh/hdsc/currentpf.htm">http://www.nws.noaa.gov/oh/hdsc/currentpf.htm</a>						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(3) A demonstration that the external liner system is free of cracks or gaps?, and						
(4) A demonstration that the system is designed and installed to surround the tank completely and to cover all surrounding soil likely to come in contact with the wastes if there were releases from the tank(s) (i.e., capable of preventing lateral and vertical migration of the hazardous waste)?  (NOTE: The reviewer must refer to Federal Register Vol. 53, No. 171, 9/2/88, pg. 34084 for information regarding coatings for external liners.)						
(5) A demonstration that the external liner system is constructed with chemical-resistant water stops in place at all joints, if any (for concrete liners only)?						
(6) A demonstration that the external liner is provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of wastes into the concrete (for concrete liners only)?						
For each vault system, is the following information provided:						
(1) Calculations to show that the vault system is designed or operated to contain 100 percent of the capacity of the largest tank within its boundary?						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
<p>(2) Calculations to show that the vault system is designed or operated to prevent run-on or infiltration of precipitation? OR</p> <p>Calculations to demonstrate that the collection system has sufficient capacity to contain run-on and precipitation from a 25-year 24-hour rainfall as well as 100 percent of the capacity of the largest tank within its boundary?</p>						
<p>(3) A demonstration that the vault is constructed using chemical-resistant water stops in place at any joints and specification of the material used for the water stops?</p>						
<p>(4) A demonstration that the vault is provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the vault material? If so, does the application specify coating or lining used, and provide the manufacturer's data sheet?</p>						
<p>(5) The method used to protect against the formation and ignition of vapors within the vault, if the wastes are ignitable or reactive?</p>						
<p>(6) The specific exterior moisture barrier used to prevent migration of moisture into the vault if subject to hydraulic pressure (provide the manufacturer's data sheet)? OR</p> <p>A description in detail on how the vault is designed or operated to prevent the migration of moisture into the vault if the vault is subject to hydraulic pressure?</p>						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
For each double-walled tank, is the following information provided:						
(1) A demonstration that the unit is designed as an integral structure (i.e., an inner tank completely enveloped within an outer shell) so that any release from the inner tank is contained by the outer shell?						
(2) For metal tanks only: The specific type(s) of corrosion protection used for the primary tank interior and the external surface of the outer shell?						
(3) A detailed plan and description of the leak detection system used including the principle of operation, design, and operating characteristics? A demonstration that it is a continuously operating unit, capable of detecting a release within 24 hours?; Unless, the owner/operator can answer the following questions:						
(a) Can the owner/operator show that the prevailing site conditions or detection technologies will not allow detection of a release within 24 hours?;						
(b) Can the owner/operator specify the earliest practical time that detection can take place?; and						
(c) Can the owner/operator demonstrate why this longer period does not pose a threat to human health and environment?						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
D-2h(3) <u>Secondary Containment and Leak Detection</u> Requirements for Ancillary Equipment: OAC 3745-50-44 (C)(2)(g) and 3745-55-93 (F)						
(NOTE: The reviewer should refer to Federal Registers and other technical guides for description of the items discussed in this section.)						
(1) Is aboveground piping (exclusive of flanges, joints valves, and other connections) inspected daily? (If yes, aboveground piping does not need secondary containment.)						
(2) Does ancillary equipment have welded flanges, welded joints, and welded connections that are visually inspected daily? (If yes, these items do not need secondary containment.)						
(3) Does ancillary equipment include sealless or magnetic coupling pumps and sealless valves that are visually inspected on a daily basis? (If yes, these items do not need secondary containment)						
(4) Is aboveground pressurized piping equipped with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure-actuated devices) that are visually inspected daily? (If yes, this type of piping does not need secondary containment.)						
(5) For other ancillary equipment, is a detailed plan and description provided which includes the following information:						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(a) how each tank system's ancillary equipment is provided with secondary containment such as jacketing, double-walled piping, or a trench?;						
(b) how the containment system has been (will be) designed, installed and operated to prevent any migration of waste or accumulated liquid to the soil, groundwater, or surface water at any time during its use?; and						
(c) how the containment system can detect and collect releases and accumulated liquids?						
At a minimum, is the following information included:						
(1) A specification of the materials of construction used to construct or line the system? (Show that these materials are compatible with the wastes in the tank system.)						
(2) A demonstration that the system has sufficient strength and thickness to prevent failure cause by any of the following:						
(a) pressure gradients (including static head and external hydrological forces)?;						
(b) physical contact with the wastes (compatibility, corrosion)?;						

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	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(c) climatic conditions (Discussion regarding UV, frost heave, precipitation, etc.); or						
(d) stress of daily operation (including stresses from nearby vehicular traffic)?						
(3) A presentation of calculations to show that the secondary containment system is placed on a foundation or base that is capable of:						
(a) providing support?;						
(b) resisting pressure gradients above and below the system?; and						
(c) preventing failure due to settlement, compression, or uplift?						
(4) A description and detailed plan of the leak detection system, including the following information:  (NOTE: Daily inspections may constitute acceptable form of leak detection monitoring. Reviewer can refer to OSWER Policy Directive 9483.00-3, 10/2/87 and RCRA Permit Policy Compendium 9483.1988 (08) for assistance.)						
(a) its operating principle?;						
(b) design features?; and						
(c) operating procedures?						

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<p>(5) A detailed plan and description that the leak detection system will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours?; OR</p> <p>A demonstration that the prevailing site conditions or detection technologies will not allow detection of a release within 24 hours? If so, can the owner/operator:</p>						
<p>(a) specify the earliest practical time that detection can take place?; and</p>						
<p>(b) Indicate why this longer period does not pose a threat to human health and the environment?</p>						
<p>(6) A demonstration on how the secondary containment system is sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation?</p>						
<p>(7) A document on how it will be ensured that spilled or leaked wastes and precipitation will be removed from the secondary containment system within 24 hours? OR</p>						
<p>(a) Details on why wastes and precipitation cannot be removed within 24 hours, and specify the earliest practice time that removal can take place and how it will take place; and</p>						

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	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(b) A demonstration on why this longer period does not pose a threat to human health and the environment.						
D-2h(4) <u>Requirements for Tank Systems Without Secondary Containment</u> OAC 3745-50-44 (C)(2)(g) and 3745-55-93 (I)						
If secondary containment has not yet been provided, has the owner/operator included a detailed plan and described how they will comply with the following:						
(1) For non-enterable underground tanks, an annual (once every 365 days) leak test that meets the requirements of OAC 3745-55-91 (B)(5) (or other tank integrity test approved by the director) with the results sent to the director?						
(2) For other than non-enterable underground tanks, either:						
(a) An annual (once every 365 days) leak test that meets the requirements of OAC 3745-55-91 (B)(5) (or other tank integrity test approved by the director)?; OR						
(b) A schedule and procedure for an assessment of the overall condition of the tank system by an independent, qualified, registered professional engineer?						

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	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(i) Are the schedule and procedures adequate to detect obvious cracks, leaks, and corrosion or erosion that may lead to cracks and leaks, and does the owner or operator remove the stored waste from the tank to allow the condition of all internal tank surfaces to be assessed?						
(ii) Is the frequency of these assessments based on the material of construction of the tank and its ancillary equipment, the age of the system, the type of corrosion or erosion protection used, the rate of corrosion or erosion observed during the previous inspection, and the characteristics of the waste being stored or treated?						
(3) For ancillary equipment, will the owner or operator conduct an annual (once every 365 days) leak test (or other annual integrity assessment measures approved by the director)?  <i>(NOTE: These procedures must be completed until such time as secondary containment meeting the requirements of OAC 3745-55-93 is provided..)</i>						
(4) Does the application state that a record of results of the annual assessments described above will be maintained on file at the facility?						
(5) Does the application state that if a tank system or component is found to be leaking or unfit for use as a result of the annual leak test or assessment described above, the owner or operator will comply with OAC Rule 3745-55-96 - Response to leaks or spills and disposition of leaking or unfit for use tank systems?						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
D-2i <u>Variance from Secondary Containment Requirements</u> OAC 3745-50-44 (C)(2)(h) and OAC 3745-55-93(G), 3745-55-93(H)						
Has the facility requested a variance (in accordance with OAC Rule 3745-55-93(H)) from the secondary containment requirements described in OAC Rule 3745-55-93?  If yes, does the permit application include:						
(1) Detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous waste or hazardous constituents into the groundwater or surface water at least as effectively as secondary containment during the active life of the tank system?						
(2) A description of how no substantial present or potential hazard will be posed to human health and the environment in the event a release does migrate to ground water or surface wate?						
D-2j <u>Controls and Practices to Prevent Spills and Overflows:</u> OAC 3745-50-44 (C)(2)(i) and 3745-55-94 (B)						
(1) Does the application include a description of general handling practices/controls to ensure there are no/minimal releases from tank and containment systems, including from the transfer, loading and unloading, and other management of wastes (discussion of types of hoses, pumps, piping, etc.)?						
(2) Does the application include a detailed description of controls and practices used to prevent spills and overflows that includes the following information:						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(a) spill prevention controls (e.g., check valves, dry disconnect couplings)?;						
(b) overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank)?; and						
(c) maintenance of sufficient free board in uncovered tanks to prevent overtopping by wave or wind action or by precipitation?						
D-2k <u>Inspections:</u> OAC 3745-55-95						
(1) Has the owner/operator provided a schedule and procedure for inspecting overfill controls?						
(2) Has the owner/operator described how they will inspect, at least once each operating day, the following:						
(a) aboveground portions of the tank system, if any, to detect corrosion or releases of waste?						
(b) data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design?						
(c) the construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect erosion or signs of release or hazardous waste (e.g., wet spots, dead vegetation)?						

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(3) Has the owner/operator described inspection of cathodic protection systems, if present, according to, at a minimum, the following schedule to ensure that they are functioning properly:						
(a) the proper operation of the cathodic protection system must be confirmed within six months after initial installation and annually thereafter?						
(b) all sources of impressed current must be inspected and/or tested, as appropriate, at least bimonthly (i.e., every other month)?  Note: The practices described in the "National Association of Corrosion Engineers (NACE)" standard, "Recommended Practice (RP-02-85) - Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the "American Petroleum Institute (API)" publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems.						
(4) Does the application state that the owner or operator will document in the operating record fo the facility an inspection of those items listed above in section D-2k?						
D-2l <u>Ignitable, Reactive, and Incompatible Wastes</u> OAC 3745-50-44 (C)(2)(j), 3745-55-98, 3745-55-99						
(1) Does the application indicate that ignitable, reactive or incompatible wastes are to be managed in the tanks?						
If ignitable or reactive wastes are to be managed in tanks, the following must be demonstrated:						

Part B Review Checklist - Section D

Facility - \_\_\_\_\_

	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(a) Does the application include a description of how the waste is treated, rendered or mixed before or immediately after placement in the tank systems so that it no longer is ignitable or reactive and that OAC 3745-54-17 (B) is complied with?; or						
(b) Does the application include a description of how the waste is stored or treated in a manner such that it protects against ignition or reaction (e.g., oxygen monitoring, specifically designed vents, nitrogen blankets, flame arrestors, etc.)?; or						
(c) Does the application state that the tank system is used solely for emergencies?;						
(2) Does the application state that incompatible wastes or incompatible wastes and materials will not be placed in the same tank system or in a tank system that has not been decontaminated and that previously held an incompatible waste or material? (see appendix to OAC 3745-55-99 for examples of incompatible wastes and materials.)?						
(3) If the facility stores or treats ignitable or reactive waste in tanks and/or proposes to mix incompatible wastes or incompatible waste and other materials, does the application state the precautions that will be taken to prevent reactions which:						
(a) Generate extreme heat or pressure, fire or explosions, or violent reactions?						
(b) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment?						

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Facility - \_\_\_\_\_

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	YES	NO	NA	Page #	Notes - NOD Comment #	Include on Inspection Checklist?
(c) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions?						
(d) Damage the structural integrity of the device or facility?						
(e) Through other like means threaten human health or the environment.						

## Resource Lists for Reviewing Tank Systems

### Regulatory List

U.S. EPA, Office of Solid Waste, *Technical Resource Documents for the Storage and Treatment of Hazardous Waste in Tank Systems*, OSWER Policy Directive No. 9483.00-1, EPA/530-SW-86-044 (Washington, DC: December 1986).

U.S. EPA 40 CFR Parts 260 to 271.

U.S. EPA, Office of Waste Program Enforcement, *Hazardous Waste Tank Systems Inspection Manual*, OSWER 9938.4 (Washington, DC: September 1988).

U.S. EPA, Office of Solid Waste and Emergency Response, OSWER Policy Directive No. 9483.00-3, (Washington, DC: October 2, 1987).

U.S. EPA, Office of Solid Waste and Emergency Response, *RCRA Permit Policy Compendium Package - Revision 8 - July 1998*, (Washington DC: July 1998)

Ohio EPA, Division of Hazardous Waste Management, RCRA Engineering Unit, *Tank System Requirements Advisory*, (Columbus, Ohio: October 27, 1997)

### Abbreviated Technical List (another list found in Tank System Requirements Advisory)

"Recommended Rules for Design & Construction of Large Welded, Low-Pressure Storage Tanks," API 620

### Coatings

"A Guide to the Use of Waterproofing, Damp proofing, Protective and Decorative Barrier Systems for Concrete," 515.1 R-79, American Concrete Institute

### Corrosion

Recommended Practice 651 - "Cathodic Protection of Aboveground Petroleum Storage Tanks," American Petroleum Institute

"Recommended Practices" by the National Assoc of Corrosion Engineers (e.g., RP-02-85, & RP-01-69)

"Recommended Practices" by the Petroleum Equipment Institute (e.g., PEI/RP 100-86)

"Cathodic Protection of Underground Petroleum Storage Tanks & Piping Systems," API 1632

"Installation of Underground Petroleum Storage Systems," API 1615

### Evaluating Tank Shells

"Tank Inspection, Repair, Alteration, and Reconstruction," API 653

"Boiler & Pressure Vessel Code, Sect. V, "Nondestructive Examination," Article 5; ASME

"Boiler & Pressure Vessel Code, Sect. III, Division. 1, Appendix. VIII, paragraphs UA-94 & 95; ASME

### Miscellaneous

Perry's Chemical Engineers' Handbook, Ch. 6 - "Joints"  
-contains descriptions of flange to pipe connections