

Bulk Carrier Hold Cleaning Procedure





Preparation

Preparing Cargo Holds for loading Grain depends on the previous cargo.

1. Cargo Holds must be thoroughly cleaned and dry and trace of previous cargo in frames, beams, girders, and other structure.
2. There should not be any loose rust and or paint scale anywhere in the Cargo Holds, Bulkheads, upper and lower hopper spaces, underneath of Hatch Covers and tank top.
3. There should not be traces of live & dead insect & weevils.
4. Bilge covers should be cleaned of any cargo residues and have enough drain holes. Bilge cover needs to be grain tight but not watertight.
5. Bilge well should be cleaned of previous cargo dray and odour free.
6. Bilge suction should be operational at all the times.

Equipment/Items necessary for Hold cleaning

The following equipment/items necessary for Hold Cleaning:

S/L	Item	Quantity
1.	High Pressure Hold Cleaning Gun (Air pressure Combi-Gun/ Toby Gun), with sufficient deck wash down hoses Hoses (Fire Hoses must not be used as wash down hoses as they are the part of the ships safety equipment)	1 No.

2.	Wash down hoses, 20 meter length, 45 mm dia complete with coupling for ship's fire main	6 Nos.
3.	Plastic jet nozzles suitable for above hoses	4 Nos
4.	Submersible (Wilden) Pump with spares	1 Number or 2 if cleaning in remote anchorage
5.	High pressure fresh water machine with extended handle & 30 meter of pressurised hose	1 No.
6.	Sufficient fresh water to complete a high pressure water rinse for all holds	100 M/T for 5 hold vessel
7.	Telescopic Ladder to extend approx. 5 meters	3 Nos.
8.	Long Handle Steel Scrappers	8 Nos.
9.	Long Handle rubber squeegee complete with 1 meter rubber blade	6 Nos.
10.	Heavy duty brooms suitable for Hold Cleaning	12 Nos.
11.	Corn brooms with handle	8 Nos.
12.	Heavy duty mops	6 Nos.
13.	Spare Mop Heads	6 Nos.
14.	Galvanized roller winger, mop buckets	4 Nos.
15.	Turks heads, round head 4"	6 Nos.
16.	Steel Hand Shovel, 6" wide, suitable for digging out hold bilges	6 Nos.
17.	Soogee cloth, 25 Meter length, width approximately 30 cm	3 Nos.
18.	Burlap, 50 Meter length X 1 Meter wide	1 Roll
S/L	Item	Quantity
19	Duct tape, grey, Industrial strength, 20 meter length X 45 mm diameter	6 Nos.
20.	Chemical Spray Pump (Kew Gun/if previous cargo was coal)	1 No.
21.	Transparent plastic, reinforced garden hose, complete with male and female plastic coupling for each sections	4 Nos

22.	Portable Halogen lights, 500 watt, to illuminate holds during cleaning. Each lamp to be complete with 50 meters of cable and have a waterproof plug fitted	4 Nos.
23.	Spare Halogen Bulbs for above	10 Nos.
24.	Aqua Tuff or other cleaning agent (if previous cargo was coal) for 5 holds	500 Liters
25.	Telescopic Ladder to extend approx. 5 meters	3 Nos.
26.	Muriatic Acid/Hydrochloric Acid (if previous cargo was Cement) with protective equipment	6 Nos.
27.	Rags	200 kg

If the above mentioned items recently supplied to the vessel, the Chief Officer should ensure that the ship's local junction box current/voltage matches with Hold Cleaning Machine current/voltage. The pressure of the Chemical Spray Pump should be checked. A vessel was delayed for 2 days at the anchorage and missed the Laycan, resulting heavy plenty.

Removal of cargo residue:

Air Blow from top using high pressure air to reach all accessible corners. Cargo to be swept, scrapped & collected in a drum. Attention to be given

- Australian ladder and its platforms and stanchions
- Beams and girders under cross decks
- Frames, beams, girders, and other structure
- Large pipes holding brackets behind the pipes



Ship's Crew Cleaning and sweeping coal cargo from the hold



Cleaning and sweeping coal cargo from hold

Loose Rust & Paint Scale:

▪ A sharp hand scraper shall be used to take off the peeling rust & paint scale
Special attention to following areas:

- Australian ladder and its platforms, hand rails and stanchions
- Australian ladder and its platforms and stanchions
- Beams and girders under cross decks
- Frames, beams, girders, and other structure
- Large pipes holding brackets behind the pipes
- Hatch coamings and under hatch covers
- Booby hatches & cover



Cleaning the Cannel of Hatch Coaming

Tank top loose rust

- Tank top should be free of loose rust and cargo residue
- Any rust which can be scraped by hand scrapers should be removed.
- The tank top should be rinsed with fresh water

■
Cleanliness of cargo hold bilges

- Hold bilges must be cleaned thoroughly to remove all residue, rust particles and cargo stains etc.
- The filter (Rose Box) must be cleaned thoroughly
- The bilge well sections shall be washed with continuous running of sea water to remove all odour and later rinsed with fresh water.



Cleaning Hold Bilge



Condition of Hold Bilge, Clean & Dry



Condition of Hold Bilge, Clean & Dry



Hold Bilge cover cleaned





Cleaning of Hold

- Use air/water Combi –Gun (also called Tobey Gun) or Maxi-Gun placed on a tri-pod stand/platform or High pressure Machine. The Combi-jet is capable of delivering a water jet over a distance of 30m to 40m, while the Maxi-Gun delivers to range of 60 m to 80 m.



Combi Gun



Combi Gun with Hose



Combi Gun placed in Tripod



Ship's Crew cleaning the Hold with High pressure machine

- Operating the water jet from Cherry Picker (if available) is most effective which should first start from upper platform of Australian ladder for removing all cargo residue from flanges of beams and girders under cross decks.
- Safety of crew when working aloft on these ladders is important specially when working at sea and with ship movement.
- Aluminum extension ladders to be used for reaching upper areas of the holds.
- There are some types of Aluminum light weight ladders available for the ship's crew to reach high areas for close inspection and cleaning.
- Tower extension ladders with extended platform are the best and most effective.
- After cleaning rinsed the Holds with High pressure fresh water machine.



Fixed High pressure fresh water Machine Portable High pressure Machine



Ship's crew cleaning the Bulkhead at remote anchorage with Aqua Tuff after discharging Coal



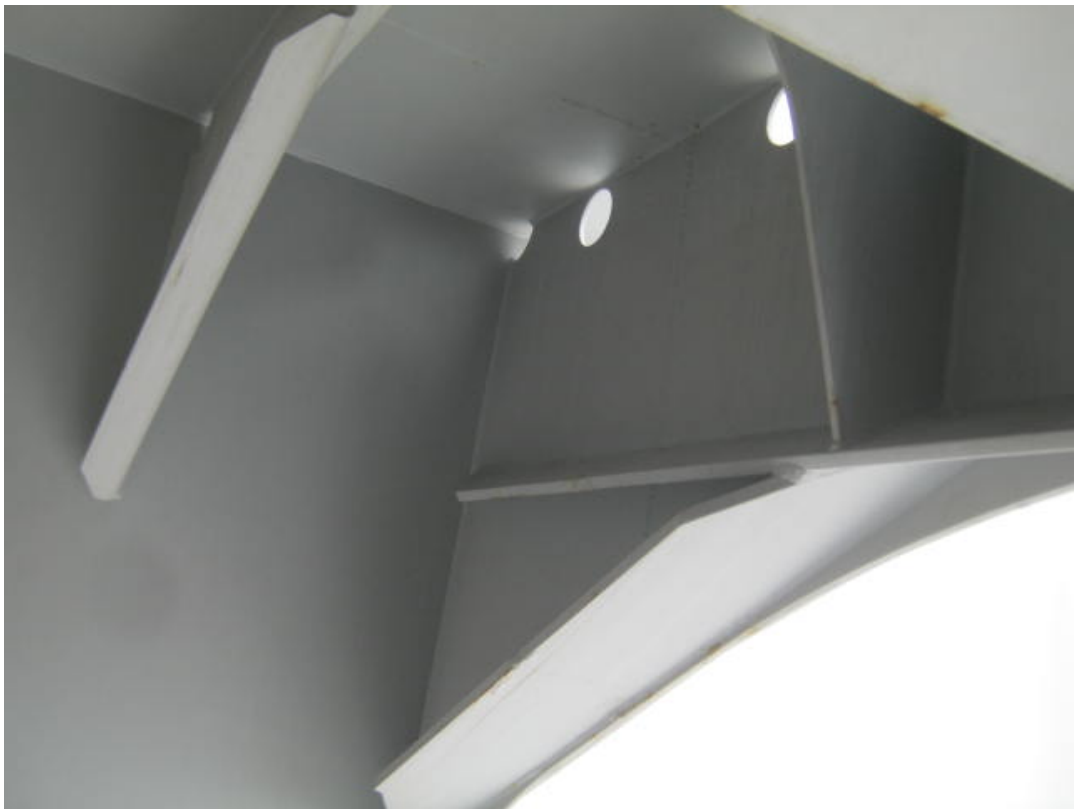
Ship's Crew washing holds with "High Pressure Jet"



Traces of previous cargo noted, Ship's crew clearing the cargo as per the order from the Inspector



No traces of previous cargo, Holds ready for "Grain Loading Inspection"



No traces of previous cargo, Holds ready for "Grain Loading Inspection"



Traces of previous cargo cleaned by “Shore Cleaning Gang”



Cargo Hold cleaned ready for “Hold Inspection”



Cement became solid and hard in between the frames

Hold cleaning after discharging Cement

To avoid cargo residues sticking inside the Holds after cleaned, a thorough cleaning is extremely necessary, more residues removed during dry cleaning, the easier will be chemical washing.

Air blowing is the most effective means of dry cleaning, if the local regulation permits. If the air blowing is not allowed, sweeping can be carried out which will time consuming & less effective.

After dry cleaning, the holds are to be chemically washed with Muriatic Acid/Hydrochloric Acid using designated cleaning kit.

The Chemicals must be applied starting at the hatch coaming and must be on the surface for 15-30 minutes to allow maximum efficiency but not to dry out. When working with chemical all personnel involved must wear full “Personal Protective Equipment”.

After Chemical washing the holds are to washed with Sea Water and rinsed with Fresh Water (depending on the next cargo).



Shore cleaning gang cleaning the Cargo Hold after discharging Cement

Hold cleaning after discharging Cement Clinker

After discharging Cement Clinker, the cleaning procedure will depend on the next Cargo. If the loading “Grain” then the tank tops/upper & lower hopper spaces must be thoroughly swept before washing with chemical, washed with sea water and finally rinsed with Fresh Water.



Condition of cargo Hold after cleaning (ready for loading Grain) after discharging Cement

Bilge Pumping

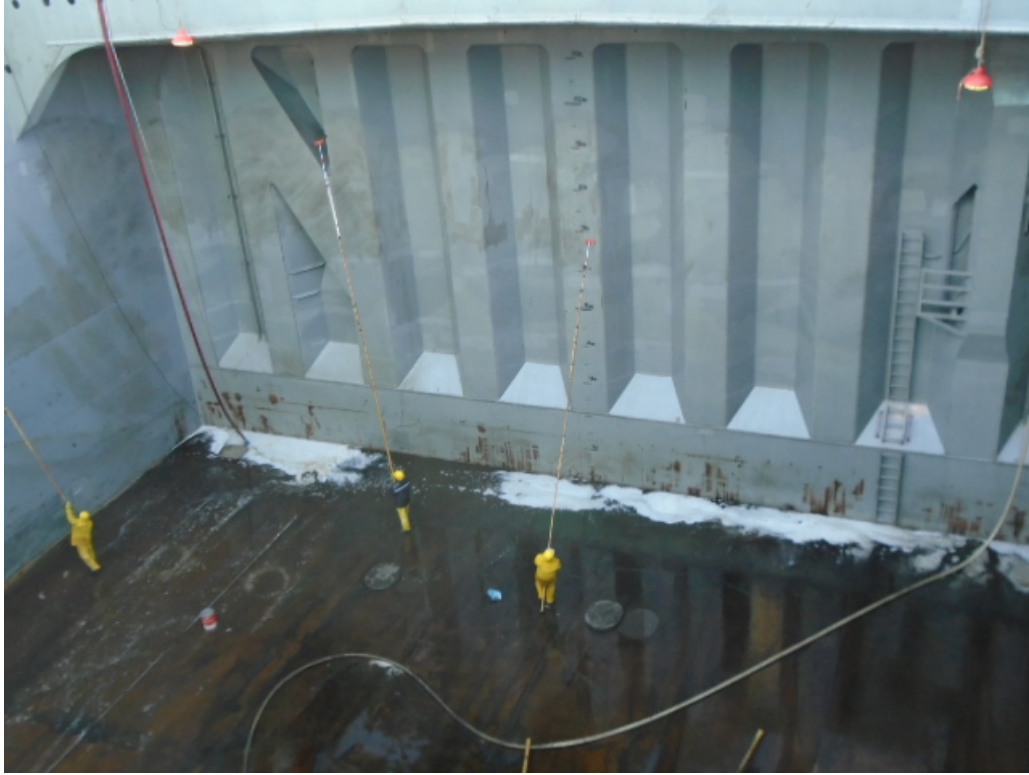
The Chief Officer should avoid vessels normal bilge pumping for emptying holds during cleaning cement residue. A submersible pump should be used to avoid clogging of permanent bilge piping system.

Hold cleaning after discharging Coal

After discharging Coal or pet coke, which leave staining, it is often necessary to use heavy-duty alkaline detergents, which are applied as an emulsion, need time to take effect and are rinsed away with seawater.

Aquatuff High Foam is a heavy alkaline cleaner with good foaming qualities which is specially developed for cargo hold cleaning.

If using chemicals for cleaning, reference should be made to the safe data sheet concerning safety precautions and handling.



Ship's Crew mopping hatch coaming with chemical cleaner and washing with fresh water



Ship's Crew cleaning tank top with chemical cleaner, mopping and brushing thoroughly

Disposal of Cargo Residues

While disposing Cargo residues and Wash down water, the Chief should ensure that MARPOL 73/78 are strictly followed.

MARPOL 73/78 Annex V requires that all ships of 400 grt and above have an approved Garbage Management Plan and a Garbage record book. An amendment that come into force in August 2006 stipulates that cargo residues are treated as garbage. Cargo residues that remain onboard after discharge and thus included in the definition of garbage, need to be disposed oc outside Special Areas (as set out in MARPOL 73/78) and far away from the nearest last mandated by the MARPOL regulations (it is float-outside of 25 nautical miles; if it sinks-outside of 12 nautical miles).

The Garbage Management Plan should include minimisation of cargo of cargo residue wash-down water and its discharge. Any cargo residues and wash-down water disposals ir discharges should be recorded as Garbage Category 4 in the Garbage Record Book, and the entries should include start and stop positions.

Washings containing Hold cleaning Chemicals

These chemicals could be in themselves be pollutants. If the substance falls within Annex 1 (Oil) or Annex II (Noxious Liquid Substances), then then the washing will have to be disposed to the Annex requirements.

Cleaning holds within, or close to port limits may also require local port regulations to be followed with respect to the disposal of hold washings. Always to check with local Ship's Agent. It may be necessary to retain washing onboard or dispose ashore using road tankers or to approved facilities. Only approved companies should be used for the disposal of hold washings, and the correct paper work and receipts should always be retained for a minimum of two years.

Disposal of Cargo Residues (Canadian Regulations)

Reference: Cargo Residues Discharge in Eastern Canada.

St. Lawrence River & Gulf of St. Lawrence:

The follow Non-Toxic Cargo Residues are allowed to be discharged in the St-Lawrence and Saguenay Rivers: Alumina, Bauxite, Bentonite, Cement, Chrome Ore, Clay, Dolomite, Ferromanganese, Gypsum, Ilmenite, Iron Ore, Iron Ore Concentrate, Lead Ore Concentrate, Limestone, Manganese Ore, Manganese Concentrate, Nepheline Syenie, Perlite, Quartz Salt, Sand, Talc, Urea, Vermiculite and Zinc Ore Concentrate. Discharge of all other cargoes is prohibited.

Discharges Zones:

- All discharges into harbor and ports are prohibited.
- If a marine mammal is within 0.50 nautical miles of the ship, no discharge of cargo residues shall be made.
- Cargo residues are to be discharged in small quantities only and under the following conditions:

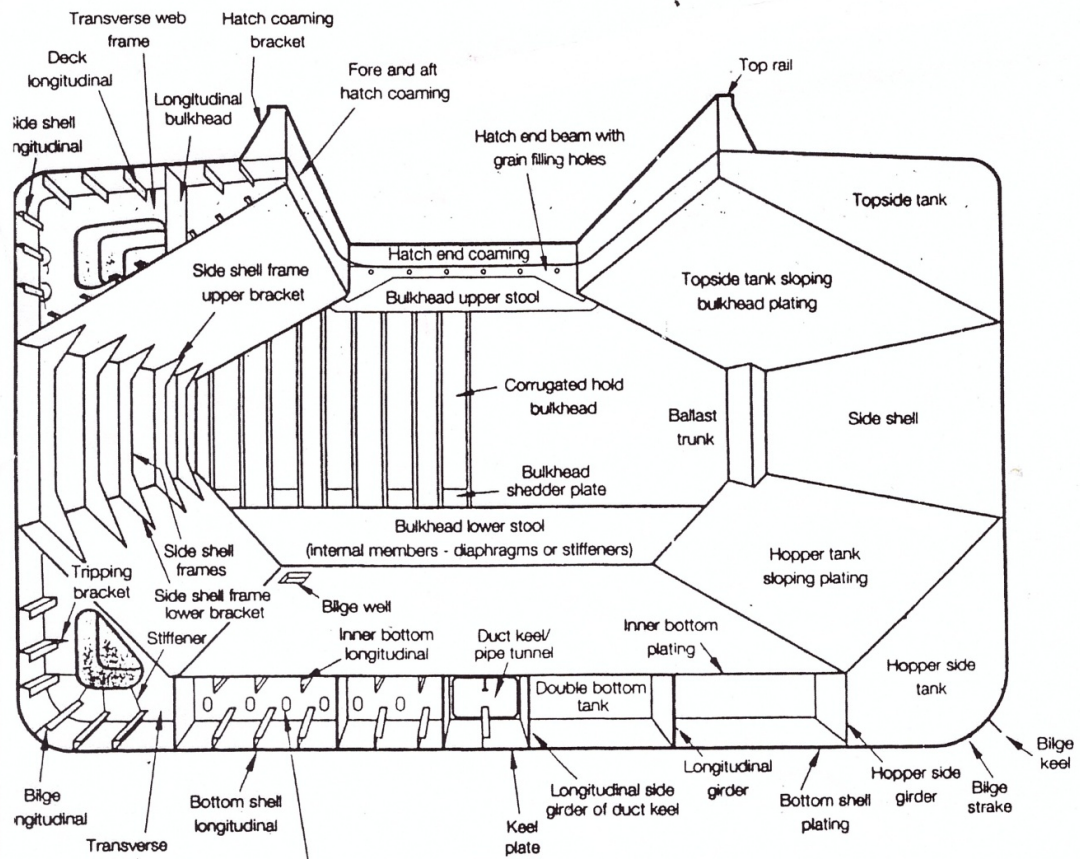
Area	Cargo Residues Restrictions	Ship Position	Reference
West of Les Escoumins	Only cargo washings (no cargo sweepings)	Ship is en route	Regulations paragraph 142 (1)(f)
East of Les Escoumins (inland waters)	Cargo sweepings & cargo washings	Ship is en route and at least 6 n.m from shore	Regulations paragraph 142 (1)(g)
East of Les Escoumins (Gulf od St. Lawrence, i.e. Fishing Zone 1)	Cargo sweepings & cargo washings	Ship is en route and at least 12 n.m from shore	Regulations paragraph 142 (1)(h)

Causes of Failure of Hold Inspection

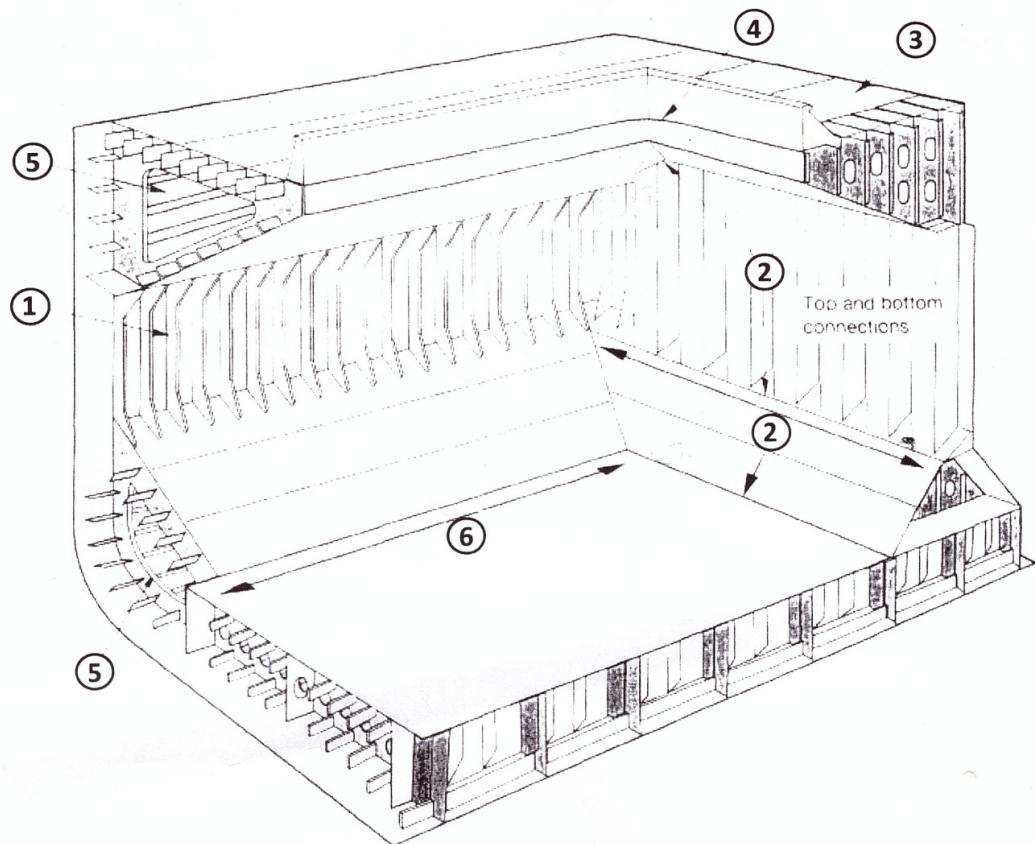
- Ship's crew completed a very quick salt water wash.
- No chemical wash was undertaken.
- No hard scraping of the bulkhead was completed.
- Staining from the previous cargo.
- Cargo dust residues
- Deposits of previous cargoes in hard to reach places, flaking paint and scale.

BULK CARRIER

STRUCTURAL CONFIGURATION



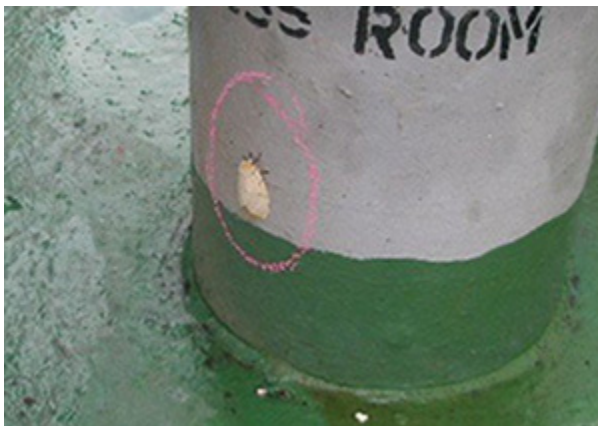
(TO BE GIVEN PARTICULAR ATTENTION DURING INSPECTIONS)



1. Hold frame – connection to upper & lower wing tanks and side shell.
2. Boundaries of transverse bulkheads and bulkhead stools.
3. Cross deck structure.
4. Hatch corners / hatch coaming brackets.
5. Localised cracking and buckling of web frames and breakdown of coatings in water ballast tanks.
6. Inner bottom plating / hopper plating intersection.

Inspect Before Entry: Asian Gypsy Moth

- Vessels calling on ports in Canada and the United States must be free of Asian gypsy moth.
- Thoroughly inspect your vessel before entering U.S. and Canadian ports to avoid delays.
- Moths will lay eggs on all vessel surfaces as well as cargo.
- Search for, remove and destroy all egg masses.



Look for moths while calling on ports in China, Japan, North Korea, South Korea and Russia (Far East region).



Search for egg masses.



Find egg masses and scrape off.



Destroy egg masses in alcohol, boiling water or by incinerating them.



Do not paint over egg masses



Limit unnecessary lighting on the vessel because moths are attracted to lights.

Useful links

Canadian Food Inspection Agency (CFIA)

Most of the information can be found on the CFIA website

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/gypsy-moth/asian-gypsy-moth/eng/1330353359964/1330353499535>

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/gypsy-moth/asian-gypsy-moth/critical-response-plan/eng/1429911170994/1429911393892>

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/gypsy-moth/asian-gypsy-moth/asian-gypsy-moth-certification/eng/1383858371139/1383858483509>

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/gypsy-moth/asian-gypsy-moth/inspection/eng/1330448207566/1330448310093>

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/gypsy-moth/fact-sheet/eng/1330355335187/1335975909100>

http://www.inspection.gc.ca/DAM/DAM-plants-vegetaux/STAGING/text-texte/pestrava_lymdis_asian_prevention_pdf_1335547080213_eng.pdf

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/forestry/d-95-03/eng/1321945111492/1321945247982>

Capt. Kamal Ahmed

15th Batch