NARRATIVE REPORT

1.0 BUILDING INFORMATION

Thorson Maintenance Center was originally constructed in 1950; a 1971 addition extended the building to the south and the west. The building has had several renovations; notably, a 1996 renovation to the office areas and a 2006-2007 renovation to select office areas in the east end of the 1950 building.

Thorson Maintenance Center is a single-story, 23,057 ft^2 building which primarily serves as office areas and work areas for maintenance personnel. The Maintenance Quonset (East Butler) (A041) and the Ag Quonset (A024) are attached to the west side of Thorson Maintenance Center and are reported separately.

The interior floor finishes included floor tile, carpet, epoxy flooring, and concrete; the interior wall finishes included gypsum wallboard and plaster; and the interior ceiling finishes included ceiling tile, plaster, and concrete. The roofing system is a flat rubber-membrane roof and the exterior of the structure is brick and concrete.

The piping systems were insulated; fiberglass insulation (both with and without hard fittings) is located throughout the building and aircell insulation (with hard fittings) is located in the 1950 building. Steam originally entered the building in room 102B, but now enters the building in room 115C and water enters the building in room 102B. Abandoned underground steam lines running between room 102B and 115C exist. Several tanks are located in room 102B with fiberglass and/or hard insulation. HVAC systems located in the building consisted of steam unit heaters and forced air furnaces with variable air volume boxes equipped with heating/cooling coils throughout the building.

2.0 ASBESTOS SURVEY INFORMATION

Thorson Maintenance Center was surveyed as part of a larger project on NDSU's Fargo, ND Campus. This report is part of "Volume 4" of a nine volume series. This report includes building specific information only; please refer to the opening section of "Volume 4" for methodologies, definitions, and other pertinent supporting information.

A total of 125 samples were collected from suspect asbestos-containing materials (ACM) from Thorson Maintenance Center on May 1, 2007 and an additional 2 samples were collected on October 28, 2007. Laboratory analysis results indicate **21 of these samples tested positive for asbestos**.

2.1 Suspect Materials Identified and Sampled

Ceiling Tile (6 types)
Floor Tile (8 types)
Carpet Mastic (3 types)
Sink Undercoating (2 types)
Window/Door Glazing (5 types)
HVAC Duct Caulk
Gypsum Wallboard (4 types)
Hard Plaster- Skim Coat
Ceiling Texture
Glue Pucks
Floor Tile Mastic (8 types)
Baseboard Adhesive (3 types)
Firestop (2 types)
Window Caulk
HVAC Canvas Connectors (2 types)
Joint Compound (4 types)
Hard Plaster- Base Coat
Hard Plaster- Monocoat

Hard Fittings on Fiberglass Insulation
Aircell Insulation
Paper Wrap around Abandoned Pipe Insulation
Tank Insulation
Exterior Door Caulk
Exterior Stucco
Underground Pipe Paper Wrap (around insulation)
Hard Fittings on Aircell Insulation
Hard Hangers on Aircell Insulation
Abandoned Pipe Hard Insulation
Exterior Window Caulk
Exterior Building Seam Caulk (3 types)
Exterior Penetration Putty
Underground Pipe Hard Insulation

The Asbestos Bulk Sample Results Table includes asbestos sampling data.

2.2 Asbestos Containing Materials

2'x4' Ceiling Tile w/ horizontal fissures and pinholes
Mastic for 12" Gray Floor tile w/ gray specks
Pink Sink Undercoating
White Sink Undercoating
Window Glazing on Doors (2 types)
Window Glazing (3 types)
Hard Fittings on Aircell Insulation
Aircell Pipe Insulation
Tank #31-110-07 Insulation
Underground Pipe Paper Wrap (around insulation)

The ACM Locations/ Friable Materials Assessments Table includes ACM locations data.

2.3 Cost Estimates

Legend Technical Services Inc. estimates abatement costs (removal & disposal) of ACM for Thorson Maintenance Center as follows:

ACM	QUANTITY	UNIT COST	TOTAL COST
Asbestos Ceiling Tile	35 ft^2	\$5.00/ft^2	\$175.00
Asbestos Floor Tile Mastic	80 ft^2	\$4.00/ft^2	\$320.00
Asbestos Sink Undercoating	2 ea	\$150.00/ea	\$300.00
Asbestos Window Glazing	18 ea	\$225.00/ea	\$4,050.00
Asbestos Aircell Pipe Insulation	104 ft	\$25.00/ft	\$2,600.00
Asbestos Hard Fittings on Aircell Insulation	21 ea	\$25.00/ea	\$525.00
Asbestos Tank Insulation	30 ft^2	\$100.00/ft^2	\$3,000.00
Asbestos Underground Pipe Paper Wrap	102 ft^2	*	*
Total Estimated Abatement Costs:			**\$10,970.00**

*The underground pipe paper wrap is buried beneath Thorson Maintenance Center between rooms 102B and 115C. It is currently not accessible. The material will require abatement in the future when Thorson Maintenance Center is demolished.

2.4 **Survey Notes**

Using non-destructive sampling techniques, LEGEND collects samples of floor tile and floor tile mastic in corner/edges under the baseboards. LEGEND noted residual black mastic mixed with new floor tile mastic in room 114 this mix tested positive for asbestos (NDSU records indicate the residual black mastic should have been abated throughout the room). LEGEND recommends assuming the residual black mastic and new floor tile mastic throughout the room to contain asbestos.

LEGEND TECHNICAL SERVICES, INC.

ACM LOCATIONS/FRIABLE MATERIALS ASSESSMENTS TABLE

LEGEND No. 0700048 (NDSU)
THORSON MAINTENANCE CENTER (BUILDING A031)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL LOW MOD HIGH	ASSESS. CAT.[1]	NOTES
Room 101B Now Room 116							
~~Mastic for 12" Gray FT~~ Abated Summer 2006	5% Chrysotile	80 ft^2	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	Mastic only, the floor tile does not contain asbestos; may be residual mastic. Refer to section 2.4 Survey Notes for more information.
Room 102 Now Room 188A							
Aircell Pipe Insulation	85-90% Chrysotile	8 ft	Friable TSI	Good	Physical ■□□ Air Erosion ■□□ Vibration ■□□	7	Straight run insulation crosses the hallway above the ceiling tile, between rooms 199W and 130
Pink Sink Undercoating	10% Chrysotile	1 sink	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	Only sink in the hallway, on the north wall between rooms 199W and 128
Window Glazing on 2'x4' Window Panes	3% Chrysotile	1 window	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The window above the exterior door in the southeast end of the hallway (between rooms 124 and 118
Room 102B Now Room 130 Abated July 2011							
~~Tank #31-110-07 Insulation~~	0-25% Amosite 0-70% Chrysotile	30 ft^2	Friable TSI	Good	Physical □■□ Air Erosion ■□□ Vibration □■□	5	Hard pack insulation around the tank and on the east end of the tank.
~~Aircell Pipe Insulation~~	85-90% Chrysotile	6 ft	Friable TSI	Significant Damage	Physical □□■ Air Erosion □□■ Vibration □□■	1	Straight run insulation enters the room in the northeast corner.
~~Hard Fittings on Aircell Pipe Insulation~~	25% Chrysotile	1 hangar 1 fitting	Friable TSI	Damage	Physical □□■ Air Erosion □□■ Vibration □□■	1	None
Room 102F Now Room 128							
Aircell Pipe Insulation	85-90% Chrysotile	1 ft	Friable TSI	Good	Physical ■□□ Air Erosion ■□□ Vibration ■□□	7	Straight run insulation slightly enters the room in the northwest corner above the ceiling tile.

* = Non-Friable materials were not assessed

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL LOW MOD HIGH	ASSESS. CAT.[1]	NOTES
~~2x4 CT w/ horizontal fissures and pinholes~~	3% Amosite Abated Februarv 2016	35 ft^2	Friable Miscellaneous	Damaged	Physical □■□ Air Erosion □■□ Vibration ■□□	4	Four full ceiling tiles and 3 small pieces.
Room 104 Now Room 199W							
Aircell Pipe Insulation	85-90% Chrysotile	11 ft	Friable TSI	Good	Physical □■□ Air Erosion ■□□ Vibration ■□□	5	Straight run insulation crosses the room above the ceiling tile from north to south.
Hard Fittings on Aircell Pipe Insulation	25% Chrysotile	2 hangars 1 fitting	Friable TSI	Damaged	Physical □■□ Air Erosion ■□□ Vibration ■□□	1	None
Room 108 Now Room 156							
Window Glazing on Doors w/ Small Windows	3% Chrysotile	2 doors	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The two doors in the northwest corner leading to hallway 188D
Window Glazing on 2'x4' Window Panes	3% Chrysotile	1 window	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The window above the exterior door in the southwest corner of the room.
Room 109 Now Room 158							
Window Glazing on Doors w/ Large Windows	3% Chrysotile	1 door	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The door in the southeast corner leading to hallway 188D
Window Glazing on Doors w/ Small Windows	3% Chrysotile	1 door	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The door in the northeast corner leading to hallway 188D
Room 110 Now Room 148							
Window Glazing on Reinforced Windows	5% Chrysotile	2 windows	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The two reinforced windows on the east wall.

* = Non-Friable materials were not assessed

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL LOW MOD HIGH	ASSESS. CAT.[1]	NOTES
Window Glazing on Doors w/ Large Windows	3% Chrysotile	3 doors	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The three doors on the east wall leading to hallway 188D
Room 111 Now Room 146							
White Sink Undercoating	10% Chrysotile	1 sink	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	Only one sink in the room (SE Corner).
Room 112 Now Room 142							
Window Glazing on Doors w/ Large Windows	3% Chrysotile	1 door	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The door on the east wall leading to room 136
Room 113 Now Room 140							
Window Glazing on Doors w/ Large Windows	3% Chrysotile	1 door	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The door on the south wall leading to room 136
Room 114 Now Room 136							
Aircell Pipe Insulation	85-90% Chrysotile	78 ft 25 ft remain rest abated April 2012	Friable TSI	Damaged	Physical ☐■☐ Air Erosion ■☐☐ Vibration ☐■☐	1	Straight run insulation runs the length of the room along the south wall, supplying several unit heaters.
Hard Fittings on Aircell Pipe Insulation	25% Chrysotile	6 hangars 10 fittings	Friable TSI	Damaged	Physical ☐■☐ Air Erosion ■☐☐ Vibration ☐■☐	1	None
Window Glazing on 2'x4' Window Panes	3% Chrysotile	2 windows	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The two windows above the exterior exit doors on the north wall of room 136

* = Non-Friable materials were not assessed

LEGEND TECHNICAL SERVICES, INC.

ACM LOCATIONS/FRIABLE MATERIALS ASSESSMENTS TABLE

LEGEND No. 0700048 (NDSU)
THORSON MAINTENANCE CENTER (BUILDING A031)

ROOM/ ACM	ASBESTOS TYPE	EST. QUANTITY	ACM TYPE	MATERIAL CONDITION	DAMAGE POTENTIAL LOW MOD HIGH	ASSESS. CAT.[1]	NOTES
Hallway 188 Now 188D							
Window Glazing on Reinforced Windows around Door	3% Chrysotile	4 windows	Non-Friable Miscellaneous	N/A*	N/A*	N/A*	The four windows around the exterior exit at the south end of hallway 188D
Underground (entering the building in rooms Now Rooms 130 and 176							
Underground Pipe Paper Wrap (around insulation)	20% Chrysotile	102 ft	Friable TSI	Significantly Damaged	Physical ■□□ Air Erosion ■□□ Vibration ■□□	1	The paper wrap is on two abandoned steam pipes between rooms the pits in 130 & 176. The visible material was assessed. (approx 1' ea)

[1]Assessment Categories:

1) Damaged or Significantly Damaged TSI ACM
2) Damaged Friable Surfacing ACM
3) Significantly Damaged Friable Surfacing ACM
4) Damaged or Significantly Damaged Friable Miscellaneous ACM
5) ACM with Potential for Damage
6) ACM with Potential for Significant Damage
7) Any Remaining Friable ACM or Friable Suspected ACM

End

* = Non-Friable materials were not assessed