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Volume IV

NWT Diamonds Project

Appendices

VOLUME IV. ENVIRONMENTAL IMPACTS
LIST OF APPENDICES

APPENDIX IV-A

Approach to Impact Assessment

NWT Diamonds Project

Appendix IV-A1

Legend for Impact Assessment Matrix

Definitions

1) VEC (Valued Ecosystem Component)	Environmental attributes or components identified as a result of a social scoping exercise as having scientific, social, cultural, economic or aesthetic value
2) Project Activity	An activity conducted at various periods throughout project development that may have an effect on a VEC (e g , road construction, tailings disposal, etc)
3) Impact	The results of the effect of a project activity on the VEC (e g , habitat loss, elevated levels of suspended solids, etc)
4) Geographic Extent	The area over which an impact may occur (e g , the Koala Lake watershed)
5) Duration/Frequency	The time period over which an impact may occur or the number of times in that period the impact can occur
6) Reversibility	Indicates the degree to which an impact is reversible (see table below)
7) Ecological/Social Context	Indicates how an impact can indirectly affect other environmental components related to the VEC
8) Probability	Indicates how likely an impact is to occur (see table below)
9) Future Capacity of Renewable Resources/ Sustainable Development	Indicates whether or not an impact will affect the capacity of renewable resources to meet the needs of the present and those of the future (see table below)
10) Mitigation	Indicates how the severity of an impact can be reduced, prevented or eliminated
11) Significance of Residual Effects	Indicates the degree to which the VEC has been/ could be affected after mitigation has been implemented (see table below)

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Ratings used for the significance of residual effects in the impact assessment matrix

Significance of Residual Effects	Types of Environmental Components		
	Physical	Biological	Socioeconomic
Major	parameter affected within most of ecozone for several decades	whole stock or population of ecozone affected over several generations	whole population of Northwest Territories affected over several generations
Moderate	parameter affected within most of ecoregion for one or more decades	portion of population of ecoregion affected over one or more generations	community affected over one or more generations
Minor	parameter affected within most of ecosection during less than one decade	a specific group of individuals within an ecosection affected during less than one generation	a specific group of individuals within a community affected during less than one generation
Negligible	parameter affected within some part of ecosection during a short period	a specific group of individuals within an ecosection affected during a short period	a specific group of individuals within a community affected during a short period

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PHYSICAL AND BIOLOGICAL IMPACT ASSESSMENT MATRIX
(EXPLORATION/ PRE-PROJECT PERIOD)

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sustainable Develop.**	**Mitigation**	**Significance of Residual Effects**
Air Quality	Road traffic	Increase in ambient particle concentrations	Along each side of unpaved roads	Throughout exploration	High (particulates are quickly dispersed)	Dust deposition on plants may affect plant populations and wildlife	High	High	Impact of dust reduced by snow cover; watering of roads	Negligible
	Bulk sampling plant, airstrip, and diesel power generation	Increase in ground level NO_x, SO_2, CO TSP concentrations	Around exploration camp	Throughout exploration	High (emissions are quickly diluted by surrounding air)	May affect plant populations and wildlife	High	High	None	Negligible
Permafrost	Road construction	Thaw and resulting settlement	Road system	Summer periods, until mid-1995	Low	Surface stability alteration	Low/ moderate	Unknown	Proper design and construction of roads	Negligible
Eskers	Quarry for construction material	Removal of material from esker	Eskers in area around site	Throughout exploration	Nil	Possible displacement of wildlife	High	High	Site rehabilitation	Minor
Water Quality	Winter drilling (through ice)	Elevated levels of suspended solids, dissolved Al	Particular lake being drilled, maybe local streams	Winter, throughout exploration	High (settling and dilution)	Effects on aquatic life/habitat	High	High	Treatment and drilling methods to minimize sediment discharge	Negligible
	Road construction	Elevated levels of suspended solids	Lakes, streams adjacent to roads	Summer periods, until mid-1995	High (settling and dilution)	Effects on aquatic life/habitat	Low	High	None	Negligible

EXPLORATION/ PRE-PROJECT PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	***Duration/ Frequency***	***Reversibility***	***Ecological / Social Context***	***Probability***	***Future Capacity of Renewable Resources/ Sust. Develop.***	***Mitigation***	***Significance of Residual Effects***
Water Quality	Bulk sampling, tailings pond discharge	Elevated TSS, Al (total and dissolved), Ni (total)	Larry Lake	During exploration bulk sampling	High	Disturbance to aquatic life	Low	High	Discharge control	Negligible
Fish/ Aquatic Habitat	Winter drilling (through ice)	Elevated turbidity and pH	Panda, Koala, Leslie, Fox 1, and Misery	Winter, throughout exploration	High (settling and dilution)	Disturbance to aquatic life	High	High	Treat drill water for pH, suspended solids, and Al	Negligible
	Tailing and sewage disposal (spills and leaks)	Elevated turbidity, Al, and pH; infilling	Larry Lake	During exploration bulk sampling	High	Disturbance to aquatic life; loss of habitat	High	High	Spill contingency program	Negligible
	Road construction	Increased turbidity and siltation	Lakes/streams adjacent to roads	Runoff and precipitation	High (settling and dilution)	Potential disturbance to aquatic life	High	High	None	Negligible
	Road construction	Loss of migration routes	Stream crossings	During periods of low flow throughout exploration	Nil/ low (not until culvert removal)	Disturbance to spawning activities	Moderate	High	Use diversion ditches and culvert reconstruction	Negligible/ minor
	Freshwater supply	Shoreline modification, habitat alteration	Little Lake	To end of 1996	High (will return to normal after 1996)	Potential disturbance to fish; loss of habitat	Low/ moderate	High	None	Negligible
Vegetation	Land-based drilling	Damage and loss of vegetation	At drill sites	<1 year	Moderate	Small-scale disturbance to habitat/ vegetation	High	High	Reclaim site if necessary	Negligible

EXPLORATION/ PRE-PROJECT PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Vegetation	Diesel power generation	Direct effect on vegetation	Around exploration camp	Year-round	Low	Possible soil impact	Low	High	Maximize fuel efficiency	Negligible
Wildlife/ Wildlife Habitat	Roads	Habitat loss	Exploration road system (Fox, Panda)	Throughout exploration	Low	Alteration of migration corridors; wildlife habituation	High	High	Employee education	Negligible
	Bulk sampling facility	Habitat loss; habituation of wildlife	Facility and adjacent habitats	During exploration bulk sampling	Moderate	Wildlife displacement	Low	High	Employee education	Negligible
Caribou	Human activity	Changes in habitat use; alteration in grazing patterns	Claim block	Summer only throughout exploration	High	Reduced caribou and predator use of the area	Low	High	Employee awareness during migration	Negligible
	Roads	Loss of habitat; altered movements	Road system (excluding winter road)	Throughout exploration	Low	Reduced caribou and predator use of the area	Low	High	None	Negligible
	Bulk sampling facility	Loss of habitat; altered movements	Facility and surrounding habitats	During exploration bulk sampling	Low	Reduced caribou and predator use of the area	Low	High	None	Negligible
	Winter roads	Diversion of caribou from migration routes	Winter roads - primarily north shore of Lac de Gras	2 weeks during spring, throughout exploration	High	Reduced caribou and predator use of the area	Low (few caribou in the area at this time)	High	None	Negligible/ minor

EXPLORATION/ PRE-PROJECT PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Caribou	Noise	Disturbance of caribou	Roads and bulk sampling facility	During caribou migration throughout exploration	High	Reduced caribou and predator use of the area	Low	High	None	Negligible/ minor
	Tailings disposal	Reduced water quality	Tailings impoundment	Summer only, throughout exploration	High	No effects as water quality parameters are acceptable	Low	High	None	Negligible
Grizzly Bears	Human activity	Alterations in habitat use and feeding patterns	Claim block	Summer only, throughout exploration	High	Reduced grizzly use of area	Low	High	Employee education on bear safety	Negligible
	Roads	Loss of feeding and denning habitat; altered movements	Road system (excluding winter road)	Throughout exploration	Nil	Reduced grizzly use of area	Low	High	None	Minor
	Bulk sampling facility	Loss of habitat; altered movements	Facility and surrounding habitats	Throughout exploration	Moderate	Reduced grizzly use of area	Low	High	None	Minor
	Noise	Displacement from habitats	Roads and bulk sampling facility	Mainly summer, throughout exploration	High	Impacts on other species, including humans	Moderate	High	None	Minor

CONSTRUCTION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Fish/Aquatic Habitat	Dam construction	Elevated turbidity, siltation	Long Lake and Panda Lake	During construction and 1 year after construction is complete	High (settling and dilution)	Potential disturbance to aquatic habitat	High	High	Contain area of construction	Negligible
	Dam construction	Loss of migration routes	Long Lake and Panda Lake	Throughout construction	Moderate	Potential disturbance to aquatic life	High	Moderate	Diversion channel between Kodiak and Panda	Minor
	Lake dewatering	Habitat loss	In 7 lakes	Throughout construction	Nil/ low (habitat probably unrecoverable)	Will affect all 7 lake populations	High	Low	Compensation for habitat loss	Negligible/ minor
	Lake dewatering	Changes in flow regimes	Downstream from dewatering site	Approximately 2 months each year, throughout construction	High (will return to normal after construction)	Will affect populations in downstream water systems	High	High	Ensure maximum flow doesn't exceed 1/2 of peak flow	Negligible
	Lake dewatering	Elevated turbidity and sedimentation	Downstream from dewatering site	2-4 months each year, throughout construction	High (solids will settle out)	Decreased water quality, may affect lake populations	High	High	Treat in settling ponds when necessary	Negligible
Vegetation	Diesel power generation	Direct effect on vegetation	Project site	Throughout construction	Low	Possible soil impact	Low	High	Maximize fuel efficiency; regular engine/vehicle maintenance	Negligible

EXPLORATION/ PRE-PROJECT PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Wilderness	Human activity	Loss of wilderness experience	Project site	Throughout exploration	Moderate (depends on success of reclamation)	Loss of wilderness	High	Moderate (depends on success of reclamation)	Minimize presence in area	Minor
Biodiversity	Human activity	Loss of vegetation, aquatic and wildlife species	Project site	Throughout exploration	High	Effect on ecosystem	Low	High	Employee education to increase awareness of surroundings	Negligible
Hydrology	Road construction	Affects surface drainage	Around roads, especially at stream crossings	Throughout exploration	Moderate	Effect on vegetation productivity	High	High (local active layer disturbance throughout period)	Engineer/ construct roads to limit impacts	Negligible/ minor
Climate	Drilling, diesel power generation	Heat island effect	Buildings in and around site	Throughout exploration	High	Increase in local temperature	Low	High	None	Negligible
	Construction of exploration camp and bulk sampling facility	Alteration of wind regime	Buildings in and around site	Throughout exploration	High	Alteration of local wind patterns and deposition of snow	Low	High	None	Negligible

IMPACT ASSESSMENT MATRIX
(CONSTRUCTION PERIOD)

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Air Quality	Blasting for preparation of site for permanent camp	Increase in ambient dust concentrations	Around permanent site	Throughout construction	High (dust deposition and ambient concentrations will diminish quickly)	Vegetation may be affected by localized dust deposition	High	High	Watering or dust suppressants as required	Negligible
	Road traffic	Increase in ambient dust concentrations	Corridor along each side of road	Daily, throughout construction	High (dust deposition and ambient concentrations will diminish quickly)	Vegetation may be affected by localized dust deposition	High	High	Road watering	Negligible
Permafrost	Road and dam construction	Surface settlement adjacent to roads	Roads over ice rich terrain	Throughout construction	Nil	Possible change of vegetation types	Low	Unknown	Proper design of roads and dams	Negligible
Eskers	Quarry development	Removal of esker material	Immediate vicinity of esker	Throughout construction	Nil	Displacement of wildlife	High	High	Site rehabilitation	Minor
Water Quality	Road, facilities, infrastructure construction	Elevated dust, suspended solids	Lakes proximal to area in question	Throughout construction	High (settling and dilution)	Effects on aquatic habitat	High	High	None	Negligible/ minor
Fish/ Aquatic Habitat	Panda diversion channel	Elevated turbidity, siltation	Kodiak Lake	During construction and 1-2 years after construction is complete	High (settling and dilution)	Potential disturbance to aquatic habitat	High	High	Stabilize banks, minimize disturbance to surrounding vegetation	Negligible

CONSTRUCTION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Vegetation	Pre-stripping; construction of rock dumps and roads; esker excavation	Loss of vegetation by excavation or burial	Localized to area of development	Throughout construction	None	Loss of habitat	High	Moderate	Revegetation of roads, rock dumps and tailings impoundment	Negligible/ minor
Wildlife/ Wildlife Habitat	Roads	Habitat loss	Road system (excluding winter road)	Throughout construction	Nil	Migration corridor alteration; displacement; collisions	Low/ moderate	High	Vehicle speed controls; driver awareness training	Negligible/ minor
	Process plant	Habitat loss	Plant and adjacent habitats	Throughout construction	Moderate/ high	Displacement of wildlife	Low/ moderate	High	None	Negligible/ minor
Caribou	Human activity	Alterations in habitat use and grazing patterns	Claim block	Summer only, throughout construction	High	Reduced use of area by caribou and carnivores	Low	High	Employee education	Negligible/ minor
	Roads	Loss of habitat; altered movements	Adjacent to roads	Throughout construction	Nil	Reduced use of area by caribou and carnivores	Low	High	None	Negligible/ minor
	Process plant	Loss of habitat; altered movements	Plant and surrounding habitats	Throughout construction	Nil	Reduced use of area by caribou and carnivores	Low	High	None	Negligible/ minor

CONSTRUCTION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Caribou	Panda diversion channel	Habitat loss; altered movements	Channel and surrounding habitats	Throughout construction	Nil	Reduced use of area by caribou and carnivores	Low	High (few caribou will be affected)	Employ means of diverting caribou	Negligible/ minor
	Noise	Disturbance of caribou	Roads and bulk sampling facility	When caribou are in the area	High	Reduced use of area by caribou and carnivores	Low	High	None	Negligible/ minor
	Tailings disposal	Reduced water quality	Tailings impoundment	When caribou are in the area	High	No effects as water quality parameters are acceptable	Low	High	None	Negligible/ minor
Grizzly Bears	Human activity	Alterations in habitat use, feeding patterns	Claim block	Summer only, throughout construction	High	Reduced use of area by grizzly bears	Low	High	Employee education	Negligible/ minor
	Roads	Loss of denning and feeding habitat	Road system (excluding winter roads)	Summer only, throughout construction	Nil	Reduced use of area by grizzly bears	Low	High	Minimize esker disturbance	Minor
	Process plant	Loss of habitat; altered movements	Plant and surrounding habitats	Summer only, throughout construction	Nil	Reduced use of area by grizzly bears	Low	High (poor habitat for grizzlies)	None	Negligible/ minor
	Noise	Displacement from habitats	Roads and process plant	Summer only, throughout construction	High	Reduced use of area by grizzly bears	Low	High (poor habitat for grizzlies)	None	Minor

CONSTRUCTION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Wilderness	Human activity	Loss of wilderness experience	Project site	Throughout construction	Moderate (depends on success of reclamation)	Loss of wilderness	High	Moderate (depends on success of reclamation)	Minimize area of land disturbed	Minor
Biodiversity	Human activity	Loss of vegetation, aquatic and wildlife species	Project site	Throughout construction	High	Effect on ecosystem	Low	High	Employee education	Negligible
Hydrology	Lake dewatering	Decrease in lake storage	Lake being dewatered	Throughout construction	High (hydro-logic regime will be reestablished)	Watershed affected	High	Moderate (larger lakes will be formed as pits fill following closure)	None	Negligible
	Lake dewatering	Increase in stream flows	Koala and Misery watersheds	During times of dewatering, throughout construction	High (streams will establish natural flows after lakes are drained)	Will increase available aquatic habitat	High	High (stream flows will reestablish after closure)	Control stream flows	Negligible
	Stream diversions	Altered flows	Watercourses around pits	Throughout construction	Nil/ low (irreversible in most of Long Lake drainage)	Alteration of runoff and flows of some streams	High	Moderate (new drainage system will eventually be established)	None	Minor
	Panda diversion channel	Diminished stream flows	Panda and Koala lakes	Throughout construction	High	Will provide additional stream habitat for fish	High	High	None	Negligible

CONSTRUCTION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Climate	Diesel power generation, construction	Heat island effect	Buildings in and around site	Throughout construction	High	Possible increase in local tem-perature	Low/ moderate	High	Conservation of fuel	Negligible
	Construction of buildings and infra-structure	Alteration of wind regime	Buildings in and around site	Throughout construction	High	Construction of buildings may alter local wind patterns and deposition of snow	High	High	None	Negligible
Groundwater	Lake dewatering	Change in flow regime	Perimeter of open pits	Throughout construction	High	Alteration of groundwater flow pattern	Low	Unknown	None	Negligible

IMPACT ASSESSMENT MATRIX
(OPERATION PERIOD)

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Air Quality	Operation of process plant; blasting in open pits	Increase in ambient dust, NO_x, SO_2, CO concentrations	Around plant and each pit	Throughout operation	High (due to high dilution rates)	May affect vegetation and visibility	High	High	Fabric filters; dynamic scrubbers for plant; blasting techniques	Negligible
	Diesel power generation and boiler operation	Increase in NO_x, SO_2, CO TSP concentrations	Around site	Throughout operation during inver-sions (mainly in winter)	High (due to high dilution rates)	May affect vegetation and visibility	High	High	Use of low sulphur diesel fuel; stacks to help increase dispersion	Negligible
	Haul road traffic, wind erosion of waste rock dumps	Increase in dust deposition and ambient dust concentrations	Corridor along each side of haul roads	Throughout operation (depends on soil moisture and wind speed)	High (due to high dilution rates)	May affect visibility and vegetation	High	High	Road watering	Negligible
	Heavy equipment exhaust emissions	Increase in NO_x, SO_2, CO TSP concentrations	Around heavy equipment	Throughout decommis-sioning during inversions (mainly in winter)	High (due to high dilution provided by surrounding air)	May affect employees, wildlife, and vegetation	High	High	Proper engine/ vehicle maintenance	Negligible
Permafrost	Tailings deposition	New permafrost will form	Long Lake basin	Throughout operation	Nil	Will stabilize surface	High	Low	None	Negligible
Water Quality	Discharge of tailings water	Possible elevated TSS and metals	Long Lake outflow to Nema Lake	Throughout operation	High	Effects on aquatic life	Low/ moderate	High	Meet discharge criteria	Negligible

OPERATION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Fish/ Aquatic Habitat	Freshwater supply	Lake drawdown (loss of habitat)	Koala and Grizzly Lakes	Throughout operation	High	Loss of habitat, potential disturbance to fish	High	Moderate (habitat will reestablish when lake refills	None	Negligible/ minor
	Haul road traffic	Increased siltation	Extent of haul road system	Each winter and spring breakup, throughout operation	High	Potential disturbance to aquatic life	Moderate	High	Stream crossing maintenance	Negligible/ minor
	Waste rock dumping	Water quality degradation by drainage	Waters adjacent to and downstream from operation	Throughout operation	High	Potential disturbance to fish	Moderate	High	Water quality monitoring	Negligible
Vegetation	Excavation of pits/eskers, roads, rock dumps	Loss of vegetation by excavation or burial	Localized to area of development	Throughout operation	Nil	Loss of habitat	High	Moderate (lost habitat may be replaced by reclamation)	Revegetation of roads and rock dumps	Negligible/ minor
	Diesel power generation	Direct effect on vegetation	Project site	Throughout operation	Low	Possible soil impact	Low	High	Maximize fuel efficiency; regular engine/vehicle maintenance	Negligible
	Winter roads	Physical damage to vegetation	Winter road system	Winter, throughout operation	Low	Potential damage to vegetation and change in permafrost	Moderate	Moderate (loss of habitat in damaged areas, should grow back)	Proper construction of roads, use of winter roads	Minor

OPERATION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Wildlife/ Wildlife Habitat	Roads	Habitat loss	Roads and immediate vicinity	Throughout operation	High	Alteration of migration corridors; wildlife displacement; collisions	Low/ moderate	High	Vehicle speed controls; driver aware-ness training; reclamation	Negligible
	Process plant	Habitat loss	Plant and adjacent habitats	Throughout operation	Moderate/ high	Loss of habitats/ displacement of wildlife	Low/ moderate	High	Site reclamation	Negligible
Caribou	Human activity	Alterations in habitat use and grazing patterns	Claim block	Summer only, throughout operation	High	Reduced use of area by caribou and carnivores	Low	High	Employee education	Negligible/ minor
	Roads	Loss of habitat; altered movements	Road system	Throughout operation	High	Reduced use of area by caribou and carnivores	Low	High	Employee education	Negligible/ minor
	Process plant	Habitat loss; altered movements	Facility and surrounding habitats	Throughout operation	High	Reduced use of area by caribou and carnivores	Low	High	Reclamation	Negligible
	Panda diversion channel	Habitat loss; altered movements	Channel and surrounding habitats	Throughout operation	Nil	Reduced use of area by caribou and carnivores	Low	High	Employ means of diverting caribou	Negligible/ minor
	Noise	Disturbance of caribou	Roads, pits and process plant	When caribou are in the area	High	Reduced use of area by caribou and carnivores	Low	High	None	Negligible/ minor

OPERATION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Caribou	Tailings disposal	Induced toxicity of drinking water	Tailings impoundment	When caribou are in the area	High	No effects as water quality parameters are acceptable	Low	High	Use traditional caribou diversion methods	Negligible
Grizzly Bears	Human activity	Alterations in habitat use and feeding patterns	Claim block	Summer only, throughout operation	High	Reduced use of areas by grizzly bears	Low	High	Employee education on bear safety	Minor
	Roads	Loss of habitat; altered movements	Road system (excluding winter road)	Summer only, throughout operation	Nil	Reduced use of areas by grizzly bears	Low/ moderate	High	Minimize esker disturbance	Minor
	Process plant	Loss of feeding and denning hab-itat; altered movements	Plant and surrounding habitats	Throughout operation	High	None (poor habitat for grizzly bears)	Low	High	Reclamation	Negligible/ minor
	Noise	Displacement from habitats	Roads, pits and process plant	Reduced use of areas by grizzly bears	High	Impacts on other species, including humans	Low	High	None	Minor
Wilderness	Human activity	Loss of wilderness experience	Project site	Throughout operation	Moderate (depends on success of reclamation)	Loss of wilderness	High	Moderate (depends on success of reclamation)	Minimize presence in area	Minor
Biodiversity	Human activity	Loss of vegetation, aquatic and wildlife species	Project site	Throughout operation	High	Effect on ecosystem	Low	High	Employee education	Negligible

OPERATION PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Hydrology	Mining	Alteration of stream flows and channels	Streams in affected watersheds	Throughout operation	High (stream flows will reestablish)	Will affect fish and aquatic habitat	High	High	Install drainage ditches and divert surface flows	Minor
	Diversion of Long Lake outflow to Nema Lake	Stream flow reduction downstream of Moose lake	Lower Koala watershed	Throughout operation	Low	Will affect fish, aquatic habitat, and runoff	High	Moderate	Potential for timed release of water	Minor
Climate	Mining and diesel power generation	Heat island effect	Buildings and open pits	Throughout operation	High	Increases in local temperature	High	High	Fuel conservation; insulated buildings	Negligible
	Mining and diesel power generation	Alteration of wind regime	Buildings and open pits	Throughout operation	High	Alteration of wind patterns and deposition of snow	High	High	None	Negligible
	Mining and diesel power generation	Thermal inversions	Open pits	Throughout operation	High	Temperature inversions and pollution in pits	High	High	Change area of activity	Negligible
	Mining and diesel power generation	Climate change	Region around site	Throughout operation	High	Global warming	Low	High	None	Negligible
	Waste rock dumps	Change in precipitation regime	Project area	During precipitation events, throughout operation	Unknown	Changes in precipitation due to orographic effect	Unknown	Unknown	None	Unknown (negligible)
Groundwater	Mining	Change in flow regime	Perimeter of open pits	Throughout operation	High	Alteration in flow pattern, effect on talik under pits	High	Unknown	None	Negligible

IMPACT ASSESSMENT MATRIX
(DECOMMISSIONING PERIOD)

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Air Quality	Heavy equipment exhaust emissions	Increase in NO_x, SO_2, CO TSP concentrations	Around heavy equipment	Throughout decommissioning during inversions (mainly in winter)	High (due to high dilution provided by surrounding air)	May affect employees, wildlife, and vegetation	High	High	Proper engine/ vehicle maintenance	Negligible
Permafrost	Tailings and surface restoration	New permafrost will form	Long Lake basin	Throughout decommissioning	Nil	Will stabilize landscape	High	High	None	Negligible/ minor (positive)
Fish/ Aquatic Habitat	Dump reclamation	Increased turbidity and sedimentation in adjacent watercourses	Remaining waste dumps not yet reclaimed	Throughout decommissioning	High	Potential disturbance to fish	Moderate	High	Control runoff	Negligible/ minor
	Tailings reclamation	Increased turbidity and sedimentation	Downstream watercourses in Long Lake basin	Throughout decommissioning	High	Potential disturbance to fish	Moderate	High	Control runoff	Negligible/ minor
	Removal of culverts and bridges	Increased turbidity and sedimentation	Receiving waters in project area	One year	High (solids will settle out)	Potential disturbance to fish	Moderate	Moderate	Control runoff	Negligible/ minor
	Road reclamation	Increased turbidity and sedimentation	Road corridors	One year	High (solids will settle out)	Potential disturbance to fish	High	Moderate	None	Negligible/ minor

DECOMMISSIONING PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	Duration/ Frequency	Reversibility	Ecological / Social Context	Probability	Future Capacity of Renewable Resources/ Sust. Develop.	Mitigation	Significance of Residual Effects
Vegetation	Reclamation of dumps, roads, site, and Long Lake tailings	Revegetation of disturbed areas	Localized to area of activity	1-2 years	Nil	Reestablishment of plant communities	High	Unknown (potential for overall increase in habitat quality if reclamation successful)	None	Minor (positive)
	Diesel power generation	Direct effect on vegetation	Project site	Throughout decommissioning	High	Possible soil impact	Low	High/ moderate	Maximize fuel efficiency; regular engine/vehicle maintenance	Negligible
Wildlife/ Wildlife Habitat (grizzlies and caribou)	Reclamation activities (recontouring, revegetating, etc.)	Increase in wildlife habitat	Project site	Throughout decommissioning	High	Return of habitat	Low	High	Not applicable	Negligible (positive)
Wilderness	Human activity	Loss of wilderness experience	Project site	Throughout decommissioning	Moderate (depends on success of reclamation)	Loss of wilderness	High	Moderate (depends on success of reclamation)	Minimize presence in area	Negligible
Hydrology	Mine closure	Alteration of lake storage	Lakes affected by mining	Throughout decommissioning	Nil for Long Lake, high for others	Pits remain, lake storage still affected	High	High	None	Negligible
	Stream diversions	Alteration of surface drainage and flows	Streams in affected watershed	Throughout decommissioning	Nil (Long Lake watershed); low (Panda and Koala if lakes returned to watershed)	Alteration of flows	High	Moderate (new lake drainage network will be established)	None	Minor

DECOMMISSIONING PERIOD

VEC	Project Activity	Potential Impact	Impact Attributes							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Climate	Reclamation activities and diesel power generation	Heat island effect	Buildings	Throughout decommissioning	High	Increases in local temperature	High	High	Fuel conservation; insulated buildings	Negligible
	Reclamation activities and diesel power generation	Alteration of wind regime	Buildings and waste rock dumps	Throughout decommissioning	High	Alteration of wind patterns and deposition of snow	High	High	Impact may be reduced when buildings are removed	Negligible
	Waste rock dumps	Change in precipitation regime	Project area	During precipitation events, throughout decommissioning	Unknown	Changes in precipitation due to orographic effect	Unknown	Unknown	None	Unknown (negligible)

of Cc

IMPACT ASSESSMENT MATRIX
(POST-DECOMMISSIONING PERIOD)

VEC	**Project Activity**	**Potential Impact**	**Impact Attributes**							
			Geographic Extent	**Duration/ Frequency**	**Reversibility**	**Ecological / Social Context**	**Probability**	**Future Capacity of Renewable Resources/ Sust. Develop.**	**Mitigation**	**Significance of Residual Effects**
Air Quality	Wind erosion of waste rock dumps	Increase in ambient dust concentrations	Around waste rock dumps	In snow-free periods until vegetation has been reestablished	Low (not readily reversible except during periods of rain)	Dust deposition on plants	High	High	None	Negligible
Water Quality	Drainage from waste rock dumps	Possible reduction in water quality	Watercourses adjacent to waste rock dumps	Until material has been stabilized by permafrost	High	Habitat degradation, potential disturbance to fish	Low	High	None	Negligible
Fish/ Aquatic Habitat	Drainage from waste rock dumps	Habitat degradation	Watercourses adjacent to waste rock dumps	Until material has been stabilized by permafrost	High	Habitat degradation, potential disturbance to fish	Low	High	None	Negligible
Wilderness	Permanent landscape alteration	Loss of wilderness experience	Pits and waste rock dumps	Indefinitely	High	Small loss of wilderness area	Low	High	None, pits will eventually fill naturally	Negligible
Hydrology	Filling of pits	Lakes will be restored	Pits that have been mined-out	Up to 200 years	Low	Larger lakes will be formed	High	Low	None	Minor (positive)
Climate	Presence of waste rock dumps	Alteration of wind regime	Waste rock dumps	Indefinitely	High	Alteration of wind patterns	Low	High	None	Negligible
	Presence of waste rock dumps	Change in precipitation	Project area	Indefinitely	Unknown	Changes in precipitation due to orographic effect	Unknown	Unknown	None	Unknown (negligible)

APPENDIX IV-B

Physical Impacts and Mitigation

Appendix IV-B1

APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No. 4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is CO
**
** All met data is from the Koala Camp Weather Station
** To run the model type:
**
**    ISCST2EM K2001CO.INP K2001CO OUT
**
** The results for this problem are provided in file K2001CO.OUT.
**
**NOTE: THE DIESEL POWER PLANT STACK HEIGHT HAS BEEN INCREASED FROM
**  16 9 M TO 22 9 M FOR THIS MODEL ITERATION  THE FUEL FOR THE DIESEL
**  POWER STATION CONTAINS 0 05 WT % SULPHUR  THE CO EMISSION RATE HAS
**   BEEN INCREASED BY 30% TO ACCOUNT FOR AIR QUALITY PERMIT APPLICATION
**  PURPOSES  THE EVENT PROCESSOR WILL NOT BE USED FOR THIS ITERATION
**  THE POWER GENERATORS @ 82 5 % OF FULL LOAD WILL BE USED TO PLOT
**  1-HOUR CO CONCENTRATIONS
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds CO
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  8  PERIOD
   POLLUTID  CO
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
   ERRORFIL  ERRORCO OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
SO LOCATION  CAT3616A  POINT    43.0    45.0    466.0
**  The diesel power plant will operate at 70% of full load for 24 h/day.
**  The emiaaion rates have already been adjusted, so use a emission
**  factor of 1.0.
SO EMISFACT  CAT3616A  HROFDY  24*1.0
SO LOCATION  CAT3616B  POINT    43.0    51 0    466 0
SO EMISFACT  CAT3616B  HROFDY  24*1.0
SO LOCATION  CAT3616C  POINT    43 0    57 0    466 0
SO EMISFACT  CAT3616C  HROFDY  24*1.0
SO LOCATION  CAT3616D  POINT    43.0    63 0    466 0
SO EMISFACT  CAT3616D  HROFDY  24*1 0
SO LOCATION  GLYBOILA  POINT    12 0  -188 0    466.0
**  The diesel fired heating boilers both operate Dec.-Mar., one boiler operates
**  Sept., Oct., Nov  and Apr , no boiler operation May to August;
**  adjust emission factors accordingly  Each boiler runs at avg  75% of full
**  load
SO EMISFACT  GLYBOILA  MONTH   3*0.75  8*0.0  1*0 75
SO LOCATION  GLYBOILB  POINT    17.0  -188.0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0 75  4*0 0   4*0.75
**  The diesel generators will use 0 05% wt  sulfur fuel, the heating boilers
**  will use No. 2 distillate fuel @ 0 2% wt  sulfur (no emission estimates
**  avail  for boiler using low sulfur fuel)
```

```
** Point Sources         QS       HS     TS     VS    DS
** Parameters:          ----     ----   ----   ----   ---
SO SRCPARAM  CAT3616A  0 882    22 9   712    20 2   0.9
SO SRCPARAM  CAT3616B  0 882    22 9   712    20 2   0.9
SO SRCPARAM  CAT3616C  0 882    22 9   712    20 2   0.9
SO SRCPARAM  CAT3616D  0 882    22.9   712    20 2   0.9
SO SRCPARAM  GLYBOILA  0.065  11.5   433     7 0   0 6
SO SRCPARAM  GLYBOILB  0.065  11 5   433.    7.0   0 6
**  Building heights and widths are input for calculation of building
**  downwash.  Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise
   BUILDHGT  CAT3616A  36*13.9
   BUILDWID  CAT3616A   0 0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616A   0 0    0 0    0.0    0.0    0 0    0.0    0.0    0 0
             CAT3616A   0 0    3.00   3 05   3 19   3 46   3 92   4 67   6 00
             CAT3616A   8.77 17 28 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616A  60 00 54 27 51.79 51.00
   BUILDHGT  CAT3616B  36*13 9
   BUILDWID  CAT3616B   0 0    0 0    0.0    0.0    0.0    0.0    0.0    0 0
             CAT3616B   0.0    0.0    0 0    0 0    0 0    0 0    0.0    0.0
             CAT3616B   0 0    9.00   9 14   9 58 10 39 11 75 14 00 18 00
             CAT3616B  26 31 30.46 30.00 30.46 31 93 34.64 39 16 46 67
             CAT3616B  51 96 47.89 45 69 45 00
   BUILDHGT  CAT3616C  36*13.9
   BUILDWID  CAT3616C   0.0    0 0    0 0    0 0    0.0    0 0    0 0    0.0
             CAT3616C   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0.0
             CAT3616C   0 0  15.00 15.23 15.96 17 32 19 58 23 33 30 00
             CAT3616C  31 93 30.46 30 00 30.46 31 93 34 64 39 16 46 67
             CAT3616C  45.03 41 50 39 60 39 00
   BUILDHGT  CAT3616D  36*13.9
   BUILDWID  CAT3616D   0 0    0 0    0.0    0 0    0 0    0 0    0.0    0 0
             CAT3616D   0 0    0 0    0.0    0 0    0 0    0 0    0.0    0 0
             CAT3616D   0 0   21 00 21.32 22.35 24 25 27 41 32.67 34 64
             CAT3616D  31 93 30 46 30.00 30 46 31.93 34.64 39.16 43 08
             CAT3616D  38 11 35 12 33.51 33 00
   BUILDHGT  GLYBOILA  36*8.5
   BUILDWID  GLYBOILA  2 03   2.13   2 31   2 61   3 11 4 00   5 85  11.52
             GLYBOILA 21 00 21.32 22.35 14.00 10 89   9 14   8 08   7.45
             GLYBOILA  7.11   7.00   7.11   7 45   8 08   9 14 10 89 14.00
             GLYBOILA 22 35 28 43 28.00 21 00 11.52   5.85   4.00   3 11
             GLYBOILA  2 61   2 31   2.13   2 00
   BUILDHGT  GLYBOILB  36*8 5
   BUILDWID  GLYBOILB  2.03   2 13   2.31   2 61   3 11   4 00   5.85 11 52
             GLYBOILB 16.00 16 25 17.03 14.00 10 89   9 14   8 08   7 45
             GLYBOILB  7.11   7 00   7 11   7.45   8.08   9 14 10 89 14.00
             GLYBOILB 22 35 33 51 33 00 21.00 11.52   5.85   4 00   3 11
             GLYBOILB  2 61   2 31   2 13   2 00

**  The open pits are also sources of CO emissions from mobile equipment.
**  Firstly, Panda Pit.
SO LOCATION  PANDAP AREA 1300  1200  460
SO EMISFACT  PANDAP HROFDY  24*1 0
SO SRCPARAM  PANDAP 0.00000903 1 0 600 0
```

```
**  Secondly, Koala Pit
SO LOCATION  KOALAP AREA 500. 300. 460
SO EMISFACT  KOALAP HROFDY  24*1.0
SO SRCPARAM  KOALAP 0 00000892 1.0 350 0

**  The Sources are divided into three different groups below:
SO SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D
SO SRCGROUP  STATION  GLYBOILA GLYBOILB
SO SRCGROUP  OPENPIT  PANDAP   KOALAP
SO FINISHED
** Details for the REceptor grid are provided below.
RE STARTING
** A total of 498 discrete receptors will be used
RE DISCCART  -2500. -2500. 457.
RE DISCCART  -2500  -2000  456
RE DISCCART  -2500  -1500  456.
RE DISCCART  -2500  -1000  453
RE DISCCART  -2500.  -750. 453.
RE DISCCART  -2500   -500  459.
RE DISCCART  -2500.  -400  468.
RE DISCCART  -2500   -300. 468
RE DISCCART  -2500   -200. 467.
RE DISCCART  -2500   -100. 466.
RE DISCCART  -2500    100. 467.
RE DISCCART  -2500    200. 468.
RE DISCCART  -2500    300. 473
RE DISCCART  -2500    400. 475.
RE DISCCART  -2500.   500. 478.
RE DISCCART  -2500.   750. 485.
RE DISCCART  -2500   1000  485
RE DISCCART  -2500   1500  485
RE DISCCART  -2500   2000  501
RE DISCCART  -2500.  2500. 501.
RE DISCCART  -2000. -2500. 455.
RE DISCCART  -2000. -2000  458
RE DISCCART  -2000. -1500  457
RE DISCCART  -2000. -1000  453
RE DISCCART  -2000.  -750  450
RE DISCCART  -2000.  -500. 448.
RE DISCCART  -2000.  -400  448
RE DISCCART  -2000   -300  448
RE DISCCART  -2000   -200  448
RE DISCCART  -2000   -100  451
RE DISCCART  -2000    100  466
RE DISCCART  -2000    200. 464
RE DISCCART  -2000    300. 465.
RE DISCCART  -2000    400  469.
RE DISCCART  -2000.   500  473.
RE DISCCART  -2000.   750  480
RE DISCCART  -2000   1000  478
RE DISCCART  -2000   1500  492
RE DISCCART  -2000.  2000  494.
RE DISCCART  -2000.  2500  505
RE DISCCART  -1500  -2500. 448
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RE DISCCART  -1500. -2000. 452
RE DISCCART  -1500  -1500  455.
RE DISCCART  -1500  -1000. 460
RE DISCCART  -1500.  -750. 454
RE DISCCART  -1500   -500  454.
RE DISCCART  -1500   -400  454
RE DISCCART  -1500   -300. 454
RE DISCCART  -1500.  -200  454.
RE DISCCART  -1500.  -100  454
RE DISCCART  -1500    100. 454
RE DISCCART  -1500    200. 454
RE DISCCART  -1500.   300. 456
RE DISCCART  -1500    400  463.
RE DISCCART  -1500    500. 467.
RE DISCCART  -1500    750  477.
RE DISCCART  -1500   1000  477
RE DISCCART  -1500   1500  487.
RE DISCCART  -1500   2000  487
RE DISCCART  -1500   2500. 497
RE DISCCART  -1000  -2500  448
RE DISCCART  -1000. -2000  448
RE DISCCART  -1000. -1500  453
RE DISCCART  -1000. -1000  453
RE DISCCART  -1000.  -750. 453
RE DISCCART  -1000.  -500  453
RE DISCCART  -1000.  -400  453.
RE DISCCART  -1000   -300  456.
RE DISCCART  -1000   -200. 455
RE DISCCART  -1000   -100. 455
RE DISCCART  -1000.   100. 454.
RE DISCCART  -1000    200  454.
RE DISCCART  -1000    300. 454
RE DISCCART  -1000.   400  454
RE DISCCART  -1000    500  455
RE DISCCART  -1000    750  467
RE DISCCART  -1000   1000  479.
RE DISCCART  -1000   1500  482
RE DISCCART  -1000.  2000  484
RE DISCCART  -1000   2500  497
RE DISCCART   -750  -2500. 448.
RE DISCCART   -750  -2000. 448.
RE DISCCART   -750  -1500. 454.
RE DISCCART   -750  -1000. 456.
RE DISCCART   -750.  -750  455
RE DISCCART   -750.  -500  456
RE DISCCART   -750.  -400  457.
RE DISCCART   -750.  -300. 460.
RE DISCCART   -750.  -200  458
RE DISCCART   -750.  -100  460
RE DISCCART   -750    100  454
RE DISCCART   -750    200  454
RE DISCCART   -750    300  454
RE DISCCART   -750    400. 455
RE DISCCART   -750    500  457
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RE DISCCART   -750.   750. 458
RE DISCCART   -750   1000. 474.
RE DISCCART   -750   1500  487
RE DISCCART   -750   2000  487.
RE DISCCART   -750   2500. 499.
RE DISCCART   -500. -2500  448.
RE DISCCART   -500  -2000  448
RE DISCCART   -500  -1500  457
RE DISCCART   -500  -1000  466
RE DISCCART   -500   -750  457
RE DISCCART   -500.  -500. 457.
RE DISCCART   -500   -400  457
RE DISCCART   -500   -300  457
RE DISCCART   -500.  -200. 456.
RE DISCCART   -500   -100  455
RE DISCCART   -500    100  454
RE DISCCART   -500.   200. 454
RE DISCCART   -500.   300  454
RE DISCCART   -500    400  454
RE DISCCART   -500    500  455
RE DISCCART   -500    750  455
RE DISCCART   -500   1000  463
RE DISCCART   -500.  1500. 484.
RE DISCCART   -500   2000  485
RE DISCCART   -500   2500  501
RE DISCCART   -400. -2500. 448.
RE DISCCART   -400  -2000  450
RE DISCCART   -400. -1500  465
RE DISCCART   -400  -1000  457
RE DISCCART   -400   -750  457
RE DISCCART   -400   -500  457
RE DISCCART   -400   -400  457
RE DISCCART   -400   -300. 455
RE DISCCART   -400   -200  455
RE DISCCART   -400   -100  455
RE DISCCART   -400    100  454
RE DISCCART   -400.   200. 454.
RE DISCCART   -400    300  454
RE DISCCART   -400    400  454
RE DISCCART   -400    500  454
RE DISCCART   -400.   750  457.
RE DISCCART   -400.  1000. 463.
RE DISCCART   -400.  1500  475.
RE DISCCART   -400   2000  485.
RE DISCCART   -400.  2500  499
RE DISCCART   -300  -2500  448
RE DISCCART   -300  -2000  457
RE DISCCART   -300  -1500. 467
RE DISCCART   -300  -1000. 458
RE DISCCART   -300.  -750. 458.
RE DISCCART   -300.  -500. 462.
RE DISCCART   -300.  -400  459.
RE DISCCART   -300.  -300  455
RE DISCCART   -300   -200  454
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RE DISCCART   -300.  -100. 454
RE DISCCART   -300    100  454
RE DISCCART   -300    200  454
RE DISCCART   -300    300  454
RE DISCCART   -300    400  454
RE DISCCART   -300    500  454
RE DISCCART   -300    750. 462.
RE DISCCART   -300   1000  466
RE DISCCART   -300   1500  468
RE DISCCART   -300   2000  487
RE DISCCART   -300   2500  495
RE DISCCART   -200  -2500. 448
RE DISCCART   -200  -2000  462
RE DISCCART   -200  -1500  467
RE DISCCART   -200  -1000  461
RE DISCCART   -200   -750  462.
RE DISCCART   -200   -500  464.
RE DISCCART   -200   -400. 462
RE DISCCART   -200   -300. 457
RE DISCCART   -200.  -200. 456.
RE DISCCART   -200.  -100  457.
RE DISCCART   -200.   100  457
RE DISCCART   -200    200  457
RE DISCCART   -200    300  457
RE DISCCART   -200.   400. 456
RE DISCCART   -200    500. 454
RE DISCCART   -200    750  460
RE DISCCART   -200   1000  465
RE DISCCART   -200   1500  470
RE DISCCART   -200.  2000. 482
RE DISCCART   -200   2500. 490.
RE DISCCART   -100  -2500  448.
RE DISCCART   -100. -2000  458.
RE DISCCART   -100. -1500  469
RE DISCCART   -100. -1000. 464
RE DISCCART   -100   -750  467.
RE DISCCART   -100   -500  463
RE DISCCART   -100   -400  463
RE DISCCART   -100.  -300. 457
RE DISCCART   -100   -200. 457
RE DISCCART   -100   -100. 457.
RE DISCCART   -100.   100  457.
RE DISCCART   -100    200  458.
RE DISCCART   -100    300  458
RE DISCCART   -100    400  460
RE DISCCART   -100    500  454
RE DISCCART   -100    750. 460
RE DISCCART   -100.  1000. 463.
RE DISCCART   -100   1500  470.
RE DISCCART   -100   2000  482
RE DISCCART   -100   2500  483
RE DISCCART    100  -2500  448
RE DISCCART    100. -2000. 458
RE DISCCART    100. -1500  468.
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RE DISCCART    100. -1000. 476
RE DISCCART    100.   -750  482
RE DISCCART    100.   -500  474
RE DISCCART    100.   -400  475
RE DISCCART    100    -300. 475.
RE DISCCART    100    -200. 466.
RE DISCCART    100    -100. 466.
RE DISCCART    100     100. 466
RE DISCCART    100.    200  466
RE DISCCART    100     300  466.
RE DISCCART    100     400  459.
RE DISCCART    100.    500  457
RE DISCCART    100     750  456
RE DISCCART    100    1000  470
RE DISCCART    100    1500  476.
RE DISCCART    100    2000  486
RE DISCCART    100.   2500  478
RE DISCCART    200. -2500  448
RE DISCCART    200  -2000  458
RE DISCCART    200  -1500  468
RE DISCCART    200  -1000. 477
RE DISCCART    200.   -750  480
RE DISCCART    200.   -500  478
RE DISCCART    200    -400  477
RE DISCCART    200    -300. 477.
RE DISCCART    200.   -200  470
RE DISCCART    200.   -100  470
RE DISCCART    200     100  470
RE DISCCART    200.    200  470
RE DISCCART    200.    300. 468.
RE DISCCART    200.    400  462
RE DISCCART    200.    500  457
RE DISCCART    200.    750  455
RE DISCCART    200.   1000. 465
RE DISCCART    200.   1500  474.
RE DISCCART    200    2000  483
RE DISCCART    200    2500  476
RE DISCCART    300  -2500  452
RE DISCCART    300  -2000  468
RE DISCCART    300. -1500. 473.
RE DISCCART    300  -1000  482
RE DISCCART    300    -750  483
RE DISCCART    300    -500  477
RE DISCCART    300    -400  477
RE DISCCART    300    -300  476
RE DISCCART    300    -200. 474.
RE DISCCART    300    -100  475.
RE DISCCART    300.    100  473.
RE DISCCART    300.    200  470
RE DISCCART    300     300  467
RE DISCCART    300     400  463
RE DISCCART    300.    500. 457.
RE DISCCART    300.    750. 454.
RE DISCCART    300.   1000. 462.
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RE DISCCART    300    1500   476
RE DISCCART    300    2000   477.
RE DISCCART    300.   2500   474.
RE DISCCART    400   -2500   457.
RE DISCCART    400   -2000.  469
RE DISCCART    400   -1500   475
RE DISCCART    400.  -1000   486
RE DISCCART    400.   -750   486
RE DISCCART    400    -500   477.
RE DISCCART    400    -400   476.
RE DISCCART    400    -300   473.
RE DISCCART    400.   -200.  469
RE DISCCART    400.   -100   468
RE DISCCART    400.    100   468.
RE DISCCART    400.    200.  468.
RE DISCCART    400.    300   465
RE DISCCART    400.    400   462
RE DISCCART    400.    500   455
RE DISCCART    400.    750   454.
RE DISCCART    400.   1000.  454
RE DISCCART    400.   1500.  468
RE DISCCART    400.   2000   473
RE DISCCART    400    2500.  473.
RE DISCCART    500   -2500   462.
RE DISCCART    500   -2000.  468.
RE DISCCART    500   -1500.  478.
RE DISCCART    500   -1000.  487.
RE DISCCART    500    -750   486
RE DISCCART    500    -500   478
RE DISCCART    500.   -400   479
RE DISCCART    500.   -300.  481.
RE DISCCART    500.   -200   481
RE DISCCART    500.   -100   477
RE DISCCART    500.    100   473
RE DISCCART    500     200   468
RE DISCCART    500.    300.  465.
RE DISCCART    500.    400   457
RE DISCCART    500     500   454
RE DISCCART    500     750   454
RE DISCCART    500    1000   454
RE DISCCART    500    1500.  471.
RE DISCCART    500.   2000   472
RE DISCCART    500    2500   472
RE DISCCART    750   -2500   462
RE DISCCART    750   -2000   474
RE DISCCART    750   -1500   483
RE DISCCART    750   -1000   493.
RE DISCCART    750    -750   488
RE DISCCART    750    -500   494
RE DISCCART    750.   -400   494.
RE DISCCART    750.   -300   487
RE DISCCART    750    -200   487
RE DISCCART    750    -100   484
RE DISCCART    750     100.  482.
```

```
RE DISCCART    750     200  477
RE DISCCART    750.    300  474
RE DISCCART    750     400  472
RE DISCCART    750     500  465
RE DISCCART    750     750  458.
RE DISCCART    750.   1000. 454.
RE DISCCART    750.   1500  457
RE DISCCART    750.   2000  464
RE DISCCART    750    2500  473
RE DISCCART   1000. -2500  464
RE DISCCART   1000. -2000. 480.
RE DISCCART   1000. -1500  482
RE DISCCART   1000. -1000  501
RE DISCCART   1000.   -750  490
RE DISCCART   1000.   -500. 493.
RE DISCCART   1000.   -400  493
RE DISCCART   1000.   -300  493
RE DISCCART   1000.   -200  484
RE DISCCART   1000.   -100  483
RE DISCCART   1000.    100. 483.
RE DISCCART   1000     200  481
RE DISCCART   1000.    300  477
RE DISCCART   1000.    400  476
RE DISCCART   1000     500  472
RE DISCCART   1000     750  467
RE DISCCART   1000.   1000. 463
RE DISCCART   1000    1500  456
RE DISCCART   1000    2000  466
RE DISCCART   1000    2500  483
RE DISCCART   1500   -2500  455
RE DISCCART   1500   -2000. 473.
RE DISCCART   1500.  -1500  481.
RE DISCCART   1500   -1000  487
RE DISCCART   1500    -750. 492
RE DISCCART   1500    -500  487
RE DISCCART   1500    -400. 487
RE DISCCART   1500    -300. 486
RE DISCCART   1500    -200. 485.
RE DISCCART   1500.   -100  483.
RE DISCCART   1500.    100. 483.
RE DISCCART   1500.    200  483.
RE DISCCART   1500     300. 483.
RE DISCCART   1500.    400. 483.
RE DISCCART   1500     500  483
RE DISCCART   1500     750  483
RE DISCCART   1500    1000  476
RE DISCCART   1500    1500  468
RE DISCCART   1500    2000  464
RE DISCCART   1500    2500. 475
RE DISCCART   2000.  -2500  454.
RE DISCCART   2000.  -2000  468
RE DISCCART   2000   -1500  473
RE DISCCART   2000   -1000  485
RE DISCCART   2000    -750  493
```

```
RE DISCCART   2000    -500  493
RE DISCCART   2000    -400  489.
RE DISCCART   2000.   -300  486
RE DISCCART   2000.   -200  484.
RE DISCCART   2000.   -100. 486
RE DISCCART   2000     100. 486
RE DISCCART   2000     200. 487
RE DISCCART   2000.    300. 487
RE DISCCART   2000.    400. 487.
RE DISCCART   2000     500  487.
RE DISCCART   2000     750. 492
RE DISCCART   2000    1000  487
RE DISCCART   2000    1500  470
RE DISCCART   2000    2000  464
RE DISCCART   2000    2500  465
RE DISCCART   2500  -2500. 454
RE DISCCART   2500  -2000  473
RE DISCCART   2500. -1500  468
RE DISCCART   2500  -1000  483.
RE DISCCART   2500    -750. 484
RE DISCCART   2500    -500. 484
RE DISCCART   2500.   -400  484
RE DISCCART   2500.   -300  484.
RE DISCCART   2500.   -200. 484
RE DISCCART   2500.   -100  484
RE DISCCART   2500.    100  489
RE DISCCART   2500.    200  494
RE DISCCART   2500     300  497
RE DISCCART   2500     400  497.
RE DISCCART   2500     500  497.
RE DISCCART   2500.    750  497.
RE DISCCART   2500    1000. 493.
RE DISCCART   2500    1500  484
RE DISCCART   2500    2000  473.
RE DISCCART   2500.   2500  468.
RE DISCCART   10000    10000    475.
RE DISCCART   10000.   -10000.  475
RE DISCCART       0.   -10000.  475.
RE DISCCART       0.   10000    475.
RE DISCCART   -10000.   10000.  475
RE DISCCART   -10000.  -10000    475
RE DISCCART    15000    15000    475.
RE DISCCART    15000   -15000    475
RE DISCCART        0   -15000.   475
RE DISCCART        0    15000.   475
RE DISCCART    15000         0.  475
RE DISCCART   -15000         0.  475
RE DISCCART   -15000    15000    475.
RE DISCCART   -15000   -15000    475
RE DISCCART        0.  -17500.   475.
RE DISCCART     5000.  -17500.   475.
RE DISCCART    10000   -17500    475
RE DISCCART    15000.  -17500    475
RE DISCCART    -5000.  -17500    475
```

```
RE DISCCART   -10000    -17500.  475
RE DISCCART   -15000.   -17500   475
RE DISCCART    20000    20000   475.
RE DISCCART    20000    -20000   475.
RE DISCCART        0    -20000   475.
RE DISCCART        0     20000   475.
RE DISCCART    -20000    20000   475
RE DISCCART    -20000.   -20000   475
RE DISCCART    2500    -5000.  475
RE DISCCART    2500    -7500   475
RE DISCCART    2500   -10000   475
RE DISCCART    2500   -12500   475
RE DISCCART    2500.  -15000.  475
RE DISCCART    2500.  -17500   475
RE DISCCART    2500   -20000   475
RE DISCCART   -5000.   -2500.  475
RE DISCCART   10000.   -2500   475
RE DISCCART   15000.   -2500   475
RE DISCCART   20000    -2500   475
RE DISCCART  -15000.   20000   475
RE DISCCART  -10000.   20000   475.
RE DISCCART   -5000.   20000   475
RE DISCCART    5000.   20000.  475
RE DISCCART   10000.   20000   475
RE DISCCART   15000.   20000   475
RE DISCCART  -20000.   15000   475.
RE DISCCART  -10000.   15000   475
RE DISCCART   -5000.   15000   475
RE DISCCART    5000    15000   475
RE DISCCART   10000    15000   475
RE DISCCART   20000.   15000   475.
RE DISCCART  -20000.   10000.  475.
RE DISCCART  -15000.   10000   475
RE DISCCART   -5000    10000   475
RE DISCCART    5000    10000   475
RE DISCCART   15000.   10000   475.
RE DISCCART   20000.   10000.  475.
RE DISCCART  -20000     5000.  475
RE DISCCART  -15000     5000.  475
RE DISCCART  -10000.    5000.  475.
RE DISCCART   -5000     5000.  475
RE DISCCART       0.    5000.  475
RE DISCCART    5000.    5000   475.
RE DISCCART   10000.    5000   475.
RE DISCCART   15000     5000   475
RE DISCCART   20000     5000   475
RE DISCCART  -20000.       0   475
RE DISCCART  -10000.       0   475
RE DISCCART   -5000        0.  475.
RE DISCCART    5000        0.  475
RE DISCCART   10000        0   475
RE DISCCART   20000.       0   475
RE DISCCART  -20000.   -5000   475
RE DISCCART  -15000.   -5000   475.
```

```
RE DISCCART  -10000.  -5000   475
RE DISCCART   -5000.  -5000   475
RE DISCCART       0   -5000   475
RE DISCCART    5000   -5000   475
RE DISCCART   10000   -5000   475.
RE DISCCART   15000   -5000   475.
RE DISCCART   20000   -5000.  475
RE DISCCART  -20000  -10000.  475
RE DISCCART  -15000  -10000.  475
RE DISCCART   -5000  -10000.  475
RE DISCCART    5000. -10000   475
RE DISCCART   15000  -10000   475.
RE DISCCART   20000  -10000   475
RE DISCCART  -20000. -15000   475
RE DISCCART  -10000. -15000   475
RE DISCCART   -5000  -15000   475.
RE DISCCART    5000  -15000.  475
RE DISCCART   10000  -15000   475.
RE DISCCART   20000  -15000   475
RE DISCCART  -15000  -20000   475.
RE DISCCART  -10000  -20000.  475
RE DISCCART   -5000  -20000.  475.
RE DISCCART    5000  -20000.  475
RE DISCCART   10000  -20000.  475
RE DISCCART   15000. -20000.  475
RE FINISHED
**  The MEteorology pathway begins here
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used  The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model   There are gaps in the met data
   INPUTFIL  ISCST294.DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The OUtput pathway begins here.
OU STARTING

**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the Cdn  Ambient Air Qual  Objective for
**  carbon monoxide 1-hour 15 mg/Nm^3 (acceptable)
   MAXIFILE  1  STATION  15000.0   MAXICO.FIL 21
```

```
   MAXIFILE  1  OPENPIT 15000.0 MAXICO.FIL 21

**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
   PLOTFILE  1  STATION  1ST K2001CO.FST 22
   PLOTFILE  1  OPENPIT 1ST K2001CO FST 22
OU FINISHED
```

APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No  4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is TSP.
**
** All met data is from the Koala Camp Weather Station.
** To run the model type:
**
**    ISCST2EM K2001TSP.INP K2001TSP OUT
**
** The results for this problem are provided in file K2001TSP OUT
**
**NOTE: THE DIESEL POWER PLANT STACK HEIGHT HAS BEEN INCREASED FROM
** 16 9 M TO 22.9 M FOR THIS MODEL ITERATION    THE FUEL FOR THE DIESEL
**  POWER STATION CONTAINS 0 05 WT % SULPHUR.  THE TSP EMISSION RATE HAS
**  BEEN INCREASED BY 40% TO ACCOUNT FOR AIR QUALITY PERMIT APPLICATION
**  PURPOSES  THE EVENT PROCESSOR WILL NOT BE USED FOR THIS ITERATION
**  THIS MODEL ITERATION IS FOR FY2001 (Year 5)
**
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds Mineral Processing Plant
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  24  PERIOD
   POLLUTID  TSP
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
   ERRORFIL  ERRORTSP OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
SO LOCATION  CAT3616A  POINT    43 0    45 0    466 0
**  The diesel power plant will operate at 70% of full load for 24 h/day
**  The emission rates have already been adjusted, so use a emission
**  factor of 1.0
SO EMISFACT  CAT3616A  HROFDY  24*1.0
SO LOCATION  CAT3616B  POINT    43 0    51.0    466 0
SO EMISFACT  CAT3616B  HROFDY  24*1.0
SO LOCATION  CAT3616C  POINT    43 0    57 0    466.0
SO EMISFACT  CAT3616C  HROFDY  24*1 0
SO LOCATION  CAT3616D  POINT    43.0    63 0    466 0
SO EMISFACT  CAT3616D  HROFDY  24*1 0
SO LOCATION  GLYBOILA  POINT    12 0  -188 0    466 0
**  The diesel fired heating boilers both operate Dec -Mar , one boiler operates
**  Sept , Oct , Nov  and Apr , no boiler operation May to August;
**  adjust emission factors accordingly   Each boiler runs at avg  75% of full
**  load.
SO EMISFACT  GLYBOILA  MONTH   3*0.75  8*0.0  1*0 75
SO LOCATION  GLYBOILB  POINT    17 0  -188.0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0 75  4*0 0   4*0 75
SO LOCATION  PRIMCRUS  POINT  -150 0   490 0    475 0
**  The primary crusher will operate for 10 hours/day so adjust the
**  emission factor accordingly
```

```
SO EMISFACT   PRIMCRUS HROFDY   7*0 0  10*1.0  7*0.0
SO LOCATION   RECLAIM   POINT  -203.0   196 0    475 0
SO LOCATION   PROPLANT  POINT   -96.0   106 0    466 0
SO LOCATION   RECPLANT  POINT  -104.0    52 0    466 0
**  The Recovery Plant Area Wet Gas Scrubber operates 12 hr/d, adjust the
**    emission factor accordingly.
SO EMISFACT   RECPLANT  HROFDY  7*0.0  12*1 0  5*0.0
**  The diesel generators will use 0.05% wt  sulfur fuel, the heating boilers
**  will use No  2 distillate fuel @ 0 2% wt  sulfur
** Point Sources        QS     HS     TS     VS    DS
** Parameters:         ----   ----   ----   ----   ---
SO SRCPARAM   CAT3616A  0 185  22 9  712.   20 2   0 9
SO SRCPARAM   CAT3616B  0 185  22 9  712    20.2   0 9
SO SRCPARAM   CAT3616C  0.185  22.9  712    20 2   0.9
SO SRCPARAM   CAT3616D  0 185  22 9  712    20 2   0 9
SO SRCPARAM   GLYBOILA  0 029  11 5  433.    7.0   0 6
SO SRCPARAM   GLYBOILB  0 029  11.5  433     7 0   0.6
SO SRCPARAM   PRIMCRUS  0.21    8.8  278    11 0   0 7
SO SRCPARAM   RECLAIM   0 19   11 9  278    10 0   0 7
SO SRCPARAM   PROPLANT  0 69   32 0  278     9 0   1 4
SO SRCPARAM   RECPLANT  0 12   35 0  278     4.6   0 8
**  Fugitive dust sources include the Panda and Koala open pits,
**  haul roads from Panda/Koala to the ROM stockpile, and
**  the waste dumps
** Firstly, the Panda pit.
SO LOCATION PANDAP AREA 1300. 1200  460.
SO SRCPARAM PANDAP 0.00000142 1.0 600

**  Secondly, the Koala pit
SO LOCATION KOALAP AREA 500  300  460
SO SRCPARAM KOALAP  0.00000165 1.0 350

**  Third, the Panda/Koala waste dump
**  A area source of TSP emissions (2000 m on a side)
SO LOCATION PKDUMP AREA -1500  800  495.
SO SRCPARAM PKDUMP 0.0000257 1 0 2000 0

**  Fourth, the Run of Mine (ROM) Stockpile near the primary crusher
**  A area source of TSP emissions (300 m on a side).
SO LOCATION ROMSTOCK AREA -300. 500. 450.
SO SRCPARAM ROMSTOCK 0.0000257 1.0 300.

**  Building heights and widths are input for calculation of building
**  downwash  Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise.
   BUILDHGT  CAT3616A  36*13 9
   BUILDWID  CAT3616A   0.0   0.0   0.0   0 0   0 0   0 0   0.0   0 0
             CAT3616A   0 0   0 0   0.0   0 0   0 0   0 0   0.0   0 0
             CAT3616A   0.0   3 00  3.05  3 19  3 46  3 92  4.67  6 00
             CAT3616A   8 77 17 28 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616A  60 00 54 27 51 79 51 00
   BUILDHGT  CAT3616B  36*13 9
   BUILDWID  CAT3616B   0 0   0 0   0 0   0 0   0.0   0.0   0 0   0.0
             CAT3616B   0 0   0.0   0.0   0 0   0 0   0 0   0.0   0 0
```

```
          CAT3616B   0 0    9.00   9 14   9 58  10 39  11.75  14 00  18 00
          CAT3616B  26.31  30 46  30.00  30 46  31.93  34 64  39 16  46 67
          CAT3616B  51.96  47 89  45.69  45 00
 BUILDHGT CAT3616C  36*13 9
 BUILDWID CAT3616C   0 0    0.0    0 0    0 0    0 0    0.0    0 0    0.0
          CAT3616C   0.0    0 0    0 0    0.0    0.0    0 0    0 0    0.0
          CAT3616C   0.0   15 00  15.23  15 96  17 32  19 58  23 33  30 00
          CAT3616C  31 93  30 46  30 00  30 46  31 93  34 64  39 16  46.67
          CAT3616C  45 03  41 50  39 60  39 00
 BUILDHGT CAT3616D  36*13 9
 BUILDWID CAT3616D   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
          CAT3616D   0 0    0.0    0 0    0 0    0 0    0 0    0 0    0.0
          CAT3616D   0.0   21 00  21.32  22 35  24 25  27.41  32.67  34.64
          CAT3616D  31 93  30 46  30.00  30 46  31.93  34 64  39.16  43 08
          CAT3616D  38 11  35.12  33 51  33 00
 BUILDHGT GLYBOILA  36*8.5
 BUILDWID GLYBOILA  2 03   2 13   2 31   2 61   3 11  4.00   5 85   11.52
          GLYBOILA 21 00  21 32  22 35  14 00  10 89   9 14   8.08   7 45
          GLYBOILA  7 11   7.00   7 11   7 45   8 08   9 14  10.89  14 00
          GLYBOILA 22.35  28 43  28.00  21 00  11 52   5 85   4.00   3 11
          GLYBOILA  2 61   2 31   2.13   2 00
 BUILDHGT GLYBOILB  36*8 5
 BUILDWID GLYBOILB  2 03   2 13   2.31   2 61   3.11   4.00   5.85  11.52
          GLYBOILB 16 00  16 25  17.03  14 00  10.89   9 14   8 08   7.45
          GLYBOILB  7 11   7.00   7 11   7 45   8 08   9 14  10 89  14 00
          GLYBOILB 22 35  33.51  33 00  21 00  11 52   5 85   4 00   3.11
          GLYBOILB  2.61   2.31   2 13   2 00
 BUILDHGT PROPLANT  36*28 5
 BUILDWID PROPLANT   2 03    2.13    2 31    2 61    3.11    4 00    5.85   11.52
          PROPLANT  26.00   26.40   27 67   30 02   33 94   33 94   30 02   27 67
          PROPLANT  26 40   26.00   69.05   72.36   78 52   88 77  105 79  136 00
          PROPLANT 138 34  132.01  130 00   11.52    5.85    4 00    3.11    2.61
          PROPLANT   2 31    2 13    2 03    2.00
 BUILDHGT RECPLANT  36*28 5
 BUILDWID RECPLANT  62.96   65.98   71 59   31.11   26 11   23 09   21 28   20 31
          RECPLANT  20 00   20.31   23 39   16.00   12 45   10 44    9 23    8 51
          RECPLANT   8 12    8.00    8 12    8.51    9 23   10 44   12 45   16 00
          RECPLANT  23 39   46.07  108.00  109.67  114.93  124 71   80 94   71 59
          RECPLANT  71.59   65.98   62 96   62 00
**  The Sources are divided into two different groups below:
SO SRCGROUP  STATION   CAT3616A CAT3616B CAT3616C CAT3616D
SO SRCGROUP  STATION   GLYBOILA GLYBOILB PRIMCRUS RECLAIM PROPLANT RECPLANT
SO SRCGROUP  OPENPIT   PANDAP KOALAP PKDUMP ROMSTOCK
**  SO SRCGROUP  MISROAD  MLINE1-MLINE68
**  SO SRCGROUP  OTHRROAD PLINE1-PLINE56 PWLIN1-PWLIN20 KWLIN1-KWLIN20
**  SO SRCGROUP  OTHRROAD PKDUMP ROMSTOCK ROMLIN1-ROMLIN4
SO FINISHED
** Details for the REceptor grid are provided below
RE STARTING
** A total of 498 discrete receptors will be used
RE DISCCART  -2500  -2500  457.
RE DISCCART  -2500  -2000. 456.
RE DISCCART  -2500. -1500  456
RE DISCCART  -2500  -1000. 453
```

```
RE DISCCART  -2500.   -750  453.
RE DISCCART  -2500    -500. 459
RE DISCCART  -2500    -400  468
RE DISCCART  -2500    -300  468
RE DISCCART  -2500.   -200  467.
RE DISCCART  -2500.   -100  466.
RE DISCCART  -2500.    100  467.
RE DISCCART  -2500.    200. 468
RE DISCCART  -2500     300. 473
RE DISCCART  -2500.    400. 475
RE DISCCART  -2500.    500  478.
RE DISCCART  -2500     750  485.
RE DISCCART  -2500    1000. 485.
RE DISCCART  -2500.   1500  485
RE DISCCART  -2500    2000  501.
RE DISCCART  -2500    2500. 501
RE DISCCART  -2000   -2500  455
RE DISCCART  -2000.  -2000  458
RE DISCCART  -2000   -1500  457
RE DISCCART  -2000   -1000  453
RE DISCCART  -2000    -750. 450
RE DISCCART  -2000.   -500  448
RE DISCCART  -2000.   -400  448
RE DISCCART  -2000.   -300  448.
RE DISCCART  -2000    -200. 448.
RE DISCCART  -2000    -100. 451.
RE DISCCART  -2000.    100. 466.
RE DISCCART  -2000     200. 464.
RE DISCCART  -2000.    300. 465.
RE DISCCART  -2000     400. 469.
RE DISCCART  -2000     500. 473.
RE DISCCART  -2000.    750  480
RE DISCCART  -2000    1000  478
RE DISCCART  -2000    1500  492.
RE DISCCART  -2000    2000. 494.
RE DISCCART  -2000.   2500  505
RE DISCCART  -1500   -2500. 448
RE DISCCART  -1500   -2000. 452.
RE DISCCART  -1500.  -1500. 455.
RE DISCCART  -1500.  -1000. 460.
RE DISCCART  -1500.   -750  454.
RE DISCCART  -1500.   -500  454.
RE DISCCART  -1500.   -400. 454.
RE DISCCART  -1500.   -300. 454
RE DISCCART  -1500    -200  454
RE DISCCART  -1500    -100  454
RE DISCCART  -1500     100  454
RE DISCCART  -1500     200  454
RE DISCCART  -1500     300  456
RE DISCCART  -1500     400. 463.
RE DISCCART  -1500.    500  467
RE DISCCART  -1500     750  477
RE DISCCART  -1500    1000. 477
RE DISCCART  -1500.   1500. 487.
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RE DISCCART  -1500.  2000  487
RE DISCCART  -1500   2500  497
RE DISCCART  -1000  -2500  448
RE DISCCART  -1000. -2000. 448
RE DISCCART  -1000. -1500  453
RE DISCCART  -1000. -1000  453
RE DISCCART  -1000.  -750. 453
RE DISCCART  -1000.  -500. 453.
RE DISCCART  -1000.  -400  453
RE DISCCART  -1000.  -300. 456.
RE DISCCART  -1000.  -200  455
RE DISCCART  -1000.  -100  455
RE DISCCART  -1000.   100  454
RE DISCCART  -1000.   200  454
RE DISCCART  -1000    300. 454
RE DISCCART  -1000    400. 454.
RE DISCCART  -1000    500. 455.
RE DISCCART  -1000    750. 467.
RE DISCCART  -1000   1000  479
RE DISCCART  -1000.  1500  482
RE DISCCART  -1000.  2000  484
RE DISCCART  -1000.  2500. 497.
RE DISCCART   -750. -2500  448
RE DISCCART   -750. -2000  448
RE DISCCART   -750. -1500  454
RE DISCCART   -750. -1000  456
RE DISCCART   -750.  -750. 455.
RE DISCCART   -750.  -500. 456.
RE DISCCART   -750.  -400  457
RE DISCCART   -750   -300  460
RE DISCCART   -750.  -200. 458.
RE DISCCART   -750.  -100  460
RE DISCCART   -750    100  454
RE DISCCART   -750    200  454
RE DISCCART   -750    300  454
RE DISCCART   -750    400  455
RE DISCCART   -750.   500. 457.
RE DISCCART   -750.   750  458
RE DISCCART   -750   1000  474
RE DISCCART   -750   1500  487
RE DISCCART   -750   2000  487
RE DISCCART   -750.  2500  499.
RE DISCCART   -500  -2500  448
RE DISCCART   -500  -2000  448
RE DISCCART   -500  -1500  457
RE DISCCART   -500  -1000. 466
RE DISCCART   -500.  -750. 457.
RE DISCCART   -500.  -500. 457.
RE DISCCART   -500   -400  457.
RE DISCCART   -500   -300  457
RE DISCCART   -500   -200  456
RE DISCCART   -500   -100  455
RE DISCCART   -500    100  454
RE DISCCART   -500.   200. 454.
```

```
RE DISCCART   -500     300. 454
RE DISCCART   -500.    400  454
RE DISCCART   -500.    500  455
RE DISCCART   -500     750  455
RE DISCCART   -500    1000  463
RE DISCCART   -500    1500  484
RE DISCCART   -500.   2000. 485.
RE DISCCART   -500.   2500  501
RE DISCCART   -400   -2500  448
RE DISCCART   -400   -2000  450
RE DISCCART   -400   -1500  465
RE DISCCART   -400   -1000. 457.
RE DISCCART   -400    -750  457
RE DISCCART   -400    -500  457
RE DISCCART   -400    -400  457
RE DISCCART   -400    -300  455.
RE DISCCART   -400.   -200  455
RE DISCCART   -400    -100  455
RE DISCCART   -400     100  454
RE DISCCART   -400     200. 454.
RE DISCCART   -400     300  454
RE DISCCART   -400     400  454
RE DISCCART   -400     500. 454.
RE DISCCART   -400     750. 457.
RE DISCCART   -400.   1000  463
RE DISCCART   -400.   1500. 475
RE DISCCART   -400.   2000  485
RE DISCCART   -400.   2500  499
RE DISCCART   -300.  -2500. 448.
RE DISCCART   -300.  -2000. 457.
RE DISCCART   -300.  -1500  467
RE DISCCART   -300   -1000  458
RE DISCCART   -300    -750  458
RE DISCCART   -300    -500  462
RE DISCCART   -300    -400  459
RE DISCCART   -300.   -300. 455
RE DISCCART   -300    -200  454.
RE DISCCART   -300    -100  454
RE DISCCART   -300     100. 454
RE DISCCART   -300.    200. 454.
RE DISCCART   -300.    300  454.
RE DISCCART   -300     400  454
RE DISCCART   -300     500  454
RE DISCCART   -300     750  462
RE DISCCART   -300    1000  466
RE DISCCART   -300    1500. 468
RE DISCCART   -300.   2000  487.
RE DISCCART   -300.   2500. 495.
RE DISCCART   -200.  -2500  448.
RE DISCCART   -200   -2000  462
RE DISCCART   -200   -1500  467
RE DISCCART   -200.  -1000  461
RE DISCCART   -200    -750  462.
RE DISCCART   -200    -500  464
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RE DISCCART   -200.  -400. 462
RE DISCCART   -200.  -300  457
RE DISCCART   -200   -200  456
RE DISCCART   -200.  -100. 457.
RE DISCCART   -200    100  457
RE DISCCART   -200    200  457
RE DISCCART   -200    300  457
RE DISCCART   -200    400  456.
RE DISCCART   -200    500. 454.
RE DISCCART   -200.   750  460
RE DISCCART   -200.  1000. 465.
RE DISCCART   -200   1500  470
RE DISCCART   -200   2000  482
RE DISCCART   -200   2500  490
RE DISCCART   -100  -2500. 448.
RE DISCCART   -100  -2000  458
RE DISCCART   -100  -1500  469
RE DISCCART   -100. -1000. 464.
RE DISCCART   -100   -750  467
RE DISCCART   -100   -500  463
RE DISCCART   -100   -400  463
RE DISCCART   -100   -300  457
RE DISCCART   -100   -200  457
RE DISCCART   -100   -100  457
RE DISCCART   -100.   100  457.
RE DISCCART   -100.   200. 458.
RE DISCCART   -100    300  458.
RE DISCCART   -100    400. 460.
RE DISCCART   -100    500. 454.
RE DISCCART   -100.   750. 460.
RE DISCCART   -100   1000  463.
RE DISCCART   -100   1500  470
RE DISCCART   -100   2000  482
RE DISCCART   -100.  2500  483
RE DISCCART    100. -2500. 448.
RE DISCCART    100. -2000  458
RE DISCCART    100  -1500  468
RE DISCCART    100  -1000  476
RE DISCCART    100   -750  482
RE DISCCART    100   -500. 474
RE DISCCART    100   -400  475
RE DISCCART    100   -300  475
RE DISCCART    100   -200. 466
RE DISCCART    100   -100  466.
RE DISCCART    100.   100  466
RE DISCCART    100.   200. 466
RE DISCCART    100    300. 466
RE DISCCART    100    400  459.
RE DISCCART    100    500  457
RE DISCCART    100    750  456
RE DISCCART    100   1000. 470
RE DISCCART    100.  1500  476.
RE DISCCART    100.  2000. 486
RE DISCCART    100   2500. 478
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RE DISCCART    200  -2500. 448.
RE DISCCART    200  -2000. 458
RE DISCCART    200. -1500. 468
RE DISCCART    200  -1000. 477
RE DISCCART    200   -750  480
RE DISCCART    200   -500  478.
RE DISCCART    200   -400. 477.
RE DISCCART    200.  -300  477.
RE DISCCART    200   -200  470
RE DISCCART    200   -100. 470.
RE DISCCART    200    100  470
RE DISCCART    200    200  470.
RE DISCCART    200.   300. 468.
RE DISCCART    200    400  462
RE DISCCART    200    500  457
RE DISCCART    200.   750  455
RE DISCCART    200   1000  465
RE DISCCART    200   1500  474
RE DISCCART    200   2000  483.
RE DISCCART    200.  2500. 476.
RE DISCCART    300  -2500. 452.
RE DISCCART    300. -2000. 468.
RE DISCCART    300. -1500. 473.
RE DISCCART    300. -1000  482.
RE DISCCART    300   -750  483
RE DISCCART    300   -500. 477.
RE DISCCART    300.  -400. 477.
RE DISCCART    300   -300  476
RE DISCCART    300   -200  474
RE DISCCART    300   -100  475
RE DISCCART    300.   100. 473.
RE DISCCART    300.   200  470.
RE DISCCART    300.   300  467
RE DISCCART    300.   400  463
RE DISCCART    300.   500  457
RE DISCCART    300.   750  454
RE DISCCART    300.  1000. 462.
RE DISCCART    300.  1500  476
RE DISCCART    300   2000  477
RE DISCCART    300   2500  474
RE DISCCART    400  -2500. 457
RE DISCCART    400  -2000  469.
RE DISCCART    400  -1500  475.
RE DISCCART    400  -1000  486
RE DISCCART    400   -750  486
RE DISCCART    400.  -500  477
RE DISCCART    400.  -400  476
RE DISCCART    400   -300  473
RE DISCCART    400.  -200. 469
RE DISCCART    400   -100. 468.
RE DISCCART    400    100. 468
RE DISCCART    400.   200. 468.
RE DISCCART    400.   300  465
RE DISCCART    400.   400  462
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RE DISCCART    400.    500. 455.
RE DISCCART    400.    750. 454
RE DISCCART    400.   1000. 454
RE DISCCART    400.   1500  468
RE DISCCART    400    2000  473
RE DISCCART    400    2500  473.
RE DISCCART    500   -2500. 462
RE DISCCART    500   -2000. 468.
RE DISCCART    500.  -1500  478.
RE DISCCART    500   -1000  487.
RE DISCCART    500.   -750  486
RE DISCCART    500    -500  478
RE DISCCART    500    -400  479.
RE DISCCART    500    -300. 481
RE DISCCART    500.   -200  481
RE DISCCART    500    -100  477
RE DISCCART    500     100  473.
RE DISCCART    500.    200  468
RE DISCCART    500     300  465
RE DISCCART    500     400  457
RE DISCCART    500     500. 454
RE DISCCART    500     750  454
RE DISCCART    500.   1000  454
RE DISCCART    500    1500  471
RE DISCCART    500    2000  472
RE DISCCART    500    2500  472
RE DISCCART    750   -2500  462
RE DISCCART    750.  -2000. 474
RE DISCCART    750   -1500  483
RE DISCCART    750   -1000  493
RE DISCCART    750    -750  488
RE DISCCART    750    -500  494
RE DISCCART    750    -400  494
RE DISCCART    750    -300  487
RE DISCCART    750    -200. 487.
RE DISCCART    750    -100. 484.
RE DISCCART    750.    100. 482.
RE DISCCART    750.    200  477.
RE DISCCART    750     300  474
RE DISCCART    750     400  472
RE DISCCART    750.    500. 465.
RE DISCCART    750     750  458
RE DISCCART    750    1000  454
RE DISCCART    750    1500  457
RE DISCCART    750    2000. 464
RE DISCCART    750    2500  473
RE DISCCART   1000   -2500  464
RE DISCCART   1000   -2000  480.
RE DISCCART   1000.  -1500  482
RE DISCCART   1000.  -1000  501
RE DISCCART   1000.   -750  490
RE DISCCART   1000.   -500. 493
RE DISCCART   1000    -400  493.
RE DISCCART   1000    -300  493
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RE DISCCART   1000    -200. 484.
RE DISCCART   1000    -100. 483.
RE DISCCART   1000     100  483.
RE DISCCART   1000     200  481
RE DISCCART   1000.    300  477
RE DISCCART   1000     400  476
RE DISCCART   1000     500  472
RE DISCCART   1000     750. 467
RE DISCCART   1000    1000. 463
RE DISCCART   1000    1500. 456
RE DISCCART   1000.   2000  466
RE DISCCART   1000    2500  483
RE DISCCART   1500   -2500. 455
RE DISCCART   1500   -2000. 473
RE DISCCART   1500   -1500  481
RE DISCCART   1500   -1000  487.
RE DISCCART   1500    -750. 492
RE DISCCART   1500.   -500  487
RE DISCCART   1500    -400  487
RE DISCCART   1500    -300  486
RE DISCCART   1500    -200  485.
RE DISCCART   1500.   -100  483.
RE DISCCART   1500.    100. 483
RE DISCCART   1500.    200  483
RE DISCCART   1500.    300  483
RE DISCCART   1500.    400  483
RE DISCCART   1500     500  483.
RE DISCCART   1500     750. 483
RE DISCCART   1500    1000  476
RE DISCCART   1500    1500  468
RE DISCCART   1500    2000. 464.
RE DISCCART   1500.   2500  475
RE DISCCART   2000   -2500  454
RE DISCCART   2000   -2000  468
RE DISCCART   2000   -1500  473
RE DISCCART   2000   -1000. 485
RE DISCCART   2000    -750. 493.
RE DISCCART   2000    -500  493.
RE DISCCART   2000    -400  489.
RE DISCCART   2000.   -300  486
RE DISCCART   2000.   -200  484
RE DISCCART   2000    -100  486
RE DISCCART   2000     100  486
RE DISCCART   2000     200  487
RE DISCCART   2000     300  487
RE DISCCART   2000.    400. 487.
RE DISCCART   2000     500. 487.
RE DISCCART   2000     750  492.
RE DISCCART   2000.   1000  487
RE DISCCART   2000    1500  470
RE DISCCART   2000    2000  464
RE DISCCART   2000    2500. 465
RE DISCCART   2500   -2500  454.
RE DISCCART   2500   -2000. 473
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RE DISCCART   2500   -1500. 468.
RE DISCCART   2500. -1000. 483
RE DISCCART   2500    -750. 484
RE DISCCART   2500    -500. 484
RE DISCCART   2500.   -400. 484.
RE DISCCART   2500    -300. 484
RE DISCCART   2500    -200  484
RE DISCCART   2500    -100. 484
RE DISCCART   2500.    100. 489.
RE DISCCART   2500.    200. 494.
RE DISCCART   2500     300. 497
RE DISCCART   2500     400. 497
RE DISCCART   2500     500. 497
RE DISCCART   2500     750  497
RE DISCCART   2500    1000  493
RE DISCCART   2500    1500  484
RE DISCCART   2500.   2000. 473.
RE DISCCART   2500.   2500. 468.
RE DISCCART  10000.    10000  475
RE DISCCART  10000.   -10000  475
RE DISCCART       0   -10000  475
RE DISCCART       0    10000  475
RE DISCCART  -10000.   10000  475
RE DISCCART  -10000   -10000  475
RE DISCCART   15000.   15000  475
RE DISCCART   15000   -15000  475
RE DISCCART       0   -15000  475
RE DISCCART       0.   15000  475
RE DISCCART   15000.       0. 475
RE DISCCART  -15000        0. 475.
RE DISCCART  -15000    15000  475.
RE DISCCART  -15000   -15000  475
RE DISCCART       0   -17500  475
RE DISCCART    5000   -17500. 475
RE DISCCART   10000   -17500  475.
RE DISCCART   15000   -17500  475
RE DISCCART   -5000   -17500  475
RE DISCCART  -10000.  -17500. 475
RE DISCCART  -15000.  -17500  475
RE DISCCART   20000.   20000  475
RE DISCCART   20000   -20000  475
RE DISCCART       0.  -20000  475
RE DISCCART       0    20000. 475
RE DISCCART  -20000    20000. 475
RE DISCCART  -20000   -20000  475.
RE DISCCART    2500    -5000   475
RE DISCCART    2500.   -7500   475.
RE DISCCART    2500   -10000   475.
RE DISCCART    2500   -12500   475
RE DISCCART    2500.  -15000   475
RE DISCCART    2500   -17500.  475
RE DISCCART    2500.  -20000.  475.
RE DISCCART   -5000    -2500   475
RE DISCCART   10000.   -2500   475
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RE DISCCART   15000.   -2500    475
RE DISCCART   20000.   -2500    475
RE DISCCART  -15000.   20000    475
RE DISCCART  -10000.   20000    475
RE DISCCART   -5000.   20000    475
RE DISCCART    5000.   20000.   475
RE DISCCART   10000.   20000.   475
RE DISCCART   15000.   20000    475
RE DISCCART  -20000    15000    475.
RE DISCCART  -10000    15000    475
RE DISCCART   -5000    15000    475.
RE DISCCART    5000.   15000.   475
RE DISCCART   10000.   15000    475
RE DISCCART   20000.   15000    475
RE DISCCART  -20000.   10000    475
RE DISCCART  -15000.   10000.   475
RE DISCCART   -5000    10000    475
RE DISCCART    5000    10000    475
RE DISCCART   15000    10000    475.
RE DISCCART   20000    10000.   475
RE DISCCART  -20000     5000    475
RE DISCCART  -15000     5000    475
RE DISCCART  -10000     5000    475
RE DISCCART   -5000.    5000    475.
RE DISCCART       0.    5000.   475.
RE DISCCART    5000     5000.   475
RE DISCCART   10000     5000.   475
RE DISCCART   15000     5000.   475
RE DISCCART   20000     5000.   475
RE DISCCART  -20000        0.   475.
RE DISCCART  -10000        0.   475
RE DISCCART   -5000        0    475
RE DISCCART    5000        0    475
RE DISCCART   10000.       0    475.
RE DISCCART   20000.       0    475.
RE DISCCART  -20000    -5000.   475.
RE DISCCART  -15000    -5000.   475.
RE DISCCART  -10000    -5000    475
RE DISCCART   -5000    -5000    475
RE DISCCART       0    -5000.   475
RE DISCCART    5000    -5000.   475
RE DISCCART   10000    -5000    475
RE DISCCART   15000.   -5000    475
RE DISCCART   20000.   -5000    475.
RE DISCCART  -20000.  -10000    475.
RE DISCCART  -15000   -10000    475.
RE DISCCART   -5000   -10000.   475
RE DISCCART    5000   -10000.   475
RE DISCCART   15000   -10000    475
RE DISCCART   20000.  -10000    475
RE DISCCART  -20000.  -15000    475
RE DISCCART  -10000.  -15000    475.
RE DISCCART   -5000   -15000.   475.
RE DISCCART    5000   -15000    475
```

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RE DISCCART   10000  -15000   475.
RE DISCCART   20000  -15000   475.
RE DISCCART  -15000  -20000.  475.
RE DISCCART  -10000. -20000   475.
RE DISCCART   -5000  -20000   475.
RE DISCCART    5000  -20000   475.
RE DISCCART   10000  -20000   475.
RE DISCCART   15000. -20000.  475.
RE FINISHED
**  The MEteorology pathway begins here
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used   The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model
   INPUTFIL  ISCST294 DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The OUtput pathway begins here
OU STARTING
**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the acceptable Cdn. Ambient Air Qual  Objective
   MAXIFILE  24  STATION  120 0   MAXITSP FIL 21
   MAXIFILE  24  OPENPIT 120.0 MAXITSP FIL 21
**   MAXIFILE  24  MISROAD 120 0 MAXITSP FIL 21
** MAXIFILE  24  OTHRROAD 120 0 MAXITSP.FIL 21
**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
   PLOTFILE  24  STATION  1ST K2001TPA FST 22
   PLOTFILE  24  OPENPIT  1ST K2001TPA FST 22
**  PLOTFILE  24  MISROAD  1ST K2001TPA FST 22
**   PLOTFILE  24  OTHRROAD 1ST K2001TPA.FST 22
   PLOTFILE  PERIOD STATION   K2001TPB FST 26
   PLOTFILE  PERIOD OPENPIT   K2001TPB.FST 26
**   PLOTFILE  PERIOD MISROAD   K2001TPB FST 26
**   PLOTFILE  PERIOD OTHRROAD  K2001TPB FST 26
OU FINISHED
```

APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No  4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is SO2
**
** All met data is from the Koala Camp Weather Station
** To run the model type:
**
**    ISCST2EM K2001SO2.INP K2001SO2.OUT
**
** The results for this problem are provided in file K2001SO2.OUT.
**
**NOTE: THE DIESEL POWER PLANT STACK HEIGHT HAS BEEN INCREASED FROM
** 16.9 M TO 22 9 M  THE FUEL FOR THE DIESEL POWER STATION CONTAINS
** 0 05 WT % SULPHUR   THE EVENTS PROCESSOR WILL NOT BE USED FOR THIS
** MODEL ITERATION.  THE DIESEL GENERATORS @ 70% OF FULL LOAD WILL BE
**  USED TO PLOT 24-HOUR AND 7,416 HOUR SO2 CONCENTRATIONS.
**
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds SO2
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1 24  PERIOD
   POLLUTID  SO2
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
   ERRORFIL  ERRORSO2 OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
SO LOCATION  CAT3616A  POINT    43 0    45 0    466 0
**  The diesel power plant will operate at 70% of full load for 24 h/day
**  The emission rates have already been adjusted, so use an emission
**  factor of 1.0.
SO EMISFACT  CAT3616A  HROFDY  24*1.0
SO LOCATION  CAT3616B  POINT    43.0    51 0    466.0
SO EMISFACT  CAT3616B  HROFDY  24*1.0
SO LOCATION  CAT3616C  POINT    43 0    57 0    466.0
SO EMISFACT  CAT3616C  HROFDY  24*1 0
SO LOCATION  CAT3616D  POINT    43 0    63 0    466.0
SO EMISFACT  CAT3616D  HROFDY  24*1 0
SO LOCATION  GLYBOILA  POINT    12 0  -188 0    466 0
**  The diesel fired heating boilers both operate Dec -Mar., one boiler operates
**  Sept , Oct., Nov  and Apr., no boiler operation May to August;
**  adjust emission factors accordingly   Each boiler runs at avg  75% of full
**  load   Assume Cleaver Brooks boilers.
SO EMISFACT  GLYBOILA  MONTH   3*0.75  8*0.0  1*0 75
SO LOCATION  GLYBOILB  POINT    17.0  -188 0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0 75  4*0 0   4*0 75
**  The diesel generators will use 0.05% wt. sulfur fuel, the heating boilers
**  will use No  2 distillate fuel @ 0 2% wt  sulfur (no emission data avail.
**  for low sulfur fuel).
** Point Sources        QS     HS    TS    VS   DS
```

```
** Parameters:              ----   ----  ----  ----  ---
   SRCPARAM  CAT3616A  0 181   22 9   712    20 2   0 9
   SRCPARAM  CAT3616B  0 181   22 9   712    20 2   0 9
   SRCPARAM  CAT3616C  0 181   22 9   712    20 2   0.9
   SRCPARAM  CAT3616D  0 181   22.9   712    20 2   0 9
   SRCPARAM  GLYBOILA  0.41    11 5   433     7 0   0.6
   SRCPARAM  GLYBOILB  0 41    11 5   433.    7 0   0.6
**  Building heights and widths are input for calculation of building
**  downwash.  Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise.
   BUILDHGT  CAT3616A  36*13 9
   BUILDWID  CAT3616A   0 0    0 0    0 0    0.0    0 0    0.0    0.0    0 0
             CAT3616A   0 0    0 0    0.0    0 0    0 0    0 0    0.0    0 0
             CAT3616A   0 0    3 00   3 05   3 19   3 46   3 92   4 67   6 00
             CAT3616A   8.77 17 28 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616A  60 00 54 27 51 79 51 00
   BUILDHGT  CAT3616B  36*13 9
   BUILDWID  CAT3616B   0 0    0 0    0 0    0 0    0.0    0 0    0 0    0 0
             CAT3616B   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616B   0 0    9 00   9.14   9.58 10 39 11 75 14 00 18 00
             CAT3616B  26 31 30 46 30.00 30.46 31 93 34 64 39 16 46 67
             CAT3616B  51 96 47.89 45 69 45 00
   BUILDHGT  CAT3616C  36*13.9
   BUILDWID  CAT3616C   0.0    0 0    0 0    0 0    0 0    0 0    0.0    0 0
             CAT3616C   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0.0
             CAT3616C   0 0   15 00 15 23 15 96 17 32 19 58 23 33 30.00
             CAT3616C  31 93 30 46 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616C  45 03 41 50 39.60 39.00
   BUILDHGT  CAT3616D  36*13.9
   BUILDWID  CAT3616D   0.0    0.0    0 0    0 0    0.0    0.0    0 0    0 0
             CAT3616D   0 0    0 0    0.0    0 0    0 0    0 0    0 0    0.0
             CAT3616D   0 0   21 00 21.32 22.35 24 25 27 41 32 67 34 64
             CAT3616D  31.93 30 46 30 00 30 46 31.93 34.64 39 16 43 08
             CAT3616D  38.11 35 12 33 51 33 00
   BUILDHGT  GLYBOILA  36*8 5
   BUILDWID  GLYBOILA  2 03   2 13   2.31   2 61   3 11 4 00   5.85   11 52
             GLYBOILA 21 00 21 32 22.35 14.00 10 89   9 14   8 08   7.45
             GLYBOILA  7.11   7.00   7.11   7 45   8 08   9 14 10.89 14 00
             GLYBOILA 22 35 28 43 28 00 21 00 11.52   5.85   4.00   3 11
             GLYBOILA  2.61   2 31   2 13   2 00
   BUILDHGT  GLYBOILB  36*8.5
   BUILDWID  GLYBOILB  2.03   2 13   2 31   2.61   3 11   4 00   5.85 11 52
             GLYBOILB 16.00 16.25 17.03 14.00 10.89   9.14   8 08   7 45
             GLYBOILB  7 11   7.00   7 11   7 45   8 08   9.14 10 89 14.00
             GLYBOILB 22 35 33 51 33 00 21 00 11.52   5.85   4 00   3 11
             GLYBOILB  2 61   2 31   2 13   2 00

**  The open pits are also sources of SO2 emissions from mobile equipment
**  Firstly, Panda Pit.
SO LOCATION  PANDAP AREA 1300. 1200  460
SO SRCPARAM  PANDAP 0 00000468 1.0 600 0

**  Secondly, Koala Pit.
SO LOCATION  KOALAP AREA 500. 300  460
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SO SRCPARAM  KOALAP 0 00000456 1 0 350 0


**  The Sources are divided into two different groups below:
SO SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D
SO SRCGROUP  STATION  GLYBOILA GLYBOILB
SO SRCGROUP  OPENPIT  PANDAP KOALAP
SO FINISHED
** Details for the REceptor grid are provided below
RE STARTING
** A total of 498 discrete receptors will be used
RE DISCCART  -2500. -2500  457
RE DISCCART  -2500. -2000. 456
RE DISCCART  -2500. -1500. 456.
RE DISCCART  -2500. -1000  453
RE DISCCART  -2500.  -750  453.
RE DISCCART  -2500.  -500. 459.
RE DISCCART  -2500   -400  468
RE DISCCART  -2500   -300  468
RE DISCCART  -2500   -200  467
RE DISCCART  -2500   -100  466.
RE DISCCART  -2500.   100. 467.
RE DISCCART  -2500.   200  468
RE DISCCART  -2500    300  473
RE DISCCART  -2500    400  475
RE DISCCART  -2500    500  478
RE DISCCART  -2500.   750. 485.
RE DISCCART  -2500.  1000  485.
RE DISCCART  -2500   1500  485.
RE DISCCART  -2500   2000  501.
RE DISCCART  -2500   2500. 501.
RE DISCCART  -2000. -2500. 455.
RE DISCCART  -2000. -2000  458.
RE DISCCART  -2000  -1500  457
RE DISCCART  -2000. -1000  453
RE DISCCART  -2000.  -750  450
RE DISCCART  -2000.  -500. 448.
RE DISCCART  -2000.  -400  448.
RE DISCCART  -2000   -300  448
RE DISCCART  -2000   -200  448
RE DISCCART  -2000.  -100. 451
RE DISCCART  -2000    100. 466.
RE DISCCART  -2000    200. 464.
RE DISCCART  -2000    300. 465
RE DISCCART  -2000    400  469
RE DISCCART  -2000.   500. 473.
RE DISCCART  -2000.   750. 480
RE DISCCART  -2000.  1000. 478
RE DISCCART  -2000   1500. 492
RE DISCCART  -2000   2000  494.
RE DISCCART  -2000   2500. 505
RE DISCCART  -1500. -2500  448
RE DISCCART  -1500. -2000  452.
RE DISCCART  -1500. -1500. 455
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RE DISCCART  -1500   -1000  460.
RE DISCCART  -1500    -750. 454.
RE DISCCART  -1500.   -500. 454.
RE DISCCART  -1500.   -400. 454.
RE DISCCART  -1500    -300  454
RE DISCCART  -1500    -200  454.
RE DISCCART  -1500    -100. 454.
RE DISCCART  -1500     100  454.
RE DISCCART  -1500     200  454
RE DISCCART  -1500     300  456
RE DISCCART  -1500     400  463
RE DISCCART  -1500     500  467
RE DISCCART  -1500     750. 477.
RE DISCCART  -1500    1000. 477.
RE DISCCART  -1500    1500. 487
RE DISCCART  -1500    2000. 487
RE DISCCART  -1500.   2500. 497.
RE DISCCART  -1000   -2500. 448
RE DISCCART  -1000   -2000. 448
RE DISCCART  -1000.  -1500. 453
RE DISCCART  -1000.  -1000. 453.
RE DISCCART  -1000.   -750. 453.
RE DISCCART  -1000.   -500. 453.
RE DISCCART  -1000    -400  453
RE DISCCART  -1000    -300  456
RE DISCCART  -1000    -200  455
RE DISCCART  -1000.   -100. 455.
RE DISCCART  -1000.    100. 454.
RE DISCCART  -1000     200  454
RE DISCCART  -1000     300  454
RE DISCCART  -1000.    400. 454.
RE DISCCART  -1000     500  455
RE DISCCART  -1000     750  467
RE DISCCART  -1000    1000  479
RE DISCCART  -1000    1500  482
RE DISCCART  -1000.   2000. 484.
RE DISCCART  -1000    2500. 497.
RE DISCCART   -750   -2500. 448.
RE DISCCART   -750.  -2000. 448.
RE DISCCART   -750.  -1500. 454.
RE DISCCART   -750.  -1000  456
RE DISCCART   -750.   -750. 455.
RE DISCCART   -750    -500  456.
RE DISCCART   -750    -400  457
RE DISCCART   -750    -300  460
RE DISCCART   -750    -200  458
RE DISCCART   -750    -100  460
RE DISCCART   -750.    100. 454.
RE DISCCART   -750.    200  454.
RE DISCCART   -750.    300. 454
RE DISCCART   -750     400  455.
RE DISCCART   -750     500  457
RE DISCCART   -750     750  458
RE DISCCART   -750    1000  474
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RE DISCCART   -750   1500  487
RE DISCCART   -750   2000. 487
RE DISCCART   -750.  2500  499
RE DISCCART   -500  -2500  448
RE DISCCART   -500  -2000  448.
RE DISCCART   -500. -1500. 457
RE DISCCART   -500. -1000. 466
RE DISCCART   -500.  -750  457
RE DISCCART   -500.  -500  457
RE DISCCART   -500   -400  457
RE DISCCART   -500   -300  457.
RE DISCCART   -500.  -200. 456.
RE DISCCART   -500   -100. 455
RE DISCCART   -500.   100  454
RE DISCCART   -500    200  454
RE DISCCART   -500.   300. 454
RE DISCCART   -500.   400. 454
RE DISCCART   -500.   500  455
RE DISCCART   -500.   750  455
RE DISCCART   -500.  1000  463
RE DISCCART   -500.  1500  484
RE DISCCART   -500.  2000. 485
RE DISCCART   -500.  2500  501
RE DISCCART   -400. -2500  448
RE DISCCART   -400  -2000  450
RE DISCCART   -400  -1500  465
RE DISCCART   -400. -1000. 457.
RE DISCCART   -400.  -750  457
RE DISCCART   -400   -500  457
RE DISCCART   -400   -400  457
RE DISCCART   -400   -300  455.
RE DISCCART   -400   -200  455
RE DISCCART   -400   -100  455
RE DISCCART   -400    100  454
RE DISCCART   -400    200  454
RE DISCCART   -400    300. 454.
RE DISCCART   -400    400  454
RE DISCCART   -400    500  454.
RE DISCCART   -400    750. 457.
RE DISCCART   -400.  1000. 463
RE DISCCART   -400.  1500. 475.
RE DISCCART   -400.  2000  485
RE DISCCART   -400   2500  499
RE DISCCART   -300  -2500  448
RE DISCCART   -300. -2000  457
RE DISCCART   -300  -1500  467
RE DISCCART   -300. -1000. 458.
RE DISCCART   -300.  -750. 458.
RE DISCCART   -300   -500. 462.
RE DISCCART   -300   -400  459.
RE DISCCART   -300.  -300  455
RE DISCCART   -300   -200  454
RE DISCCART   -300.  -100. 454.
RE DISCCART   -300    100. 454.
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RE DISCCART   -300     200. 454.
RE DISCCART   -300     300. 454.
RE DISCCART   -300     400. 454.
RE DISCCART   -300.    500. 454
RE DISCCART   -300     750. 462
RE DISCCART   -300    1000  466
RE DISCCART   -300    1500. 468.
RE DISCCART   -300    2000. 487.
RE DISCCART   -300.   2500. 495
RE DISCCART   -200   -2500. 448
RE DISCCART   -200   -2000  462
RE DISCCART   -200.  -1500. 467.
RE DISCCART   -200   -1000. 461.
RE DISCCART   -200.   -750  462
RE DISCCART   -200    -500  464
RE DISCCART   -200    -400  462
RE DISCCART   -200    -300. 457.
RE DISCCART   -200.   -200  456.
RE DISCCART   -200    -100  457
RE DISCCART   -200     100  457.
RE DISCCART   -200     200  457.
RE DISCCART   -200     300. 457.
RE DISCCART   -200.    400  456
RE DISCCART   -200     500. 454
RE DISCCART   -200     750. 460
RE DISCCART   -200    1000  465
RE DISCCART   -200    1500  470
RE DISCCART   -200    2000. 482.
RE DISCCART   -200.   2500  490.
RE DISCCART   -100.  -2500  448
RE DISCCART   -100.  -2000  458
RE DISCCART   -100   -1500  469
RE DISCCART   -100   -1000. 464
RE DISCCART   -100.   -750. 467.
RE DISCCART   -100    -500  463
RE DISCCART   -100    -400  463
RE DISCCART   -100.   -300. 457
RE DISCCART   -100    -200  457
RE DISCCART   -100    -100  457
RE DISCCART   -100     100  457
RE DISCCART   -100     200  458
RE DISCCART   -100     300  458
RE DISCCART   -100.    400. 460.
RE DISCCART   -100.    500. 454.
RE DISCCART   -100.    750  460.
RE DISCCART   -100.   1000  463
RE DISCCART   -100    1500  470
RE DISCCART   -100    2000. 482.
RE DISCCART   -100    2500  483
RE DISCCART    100   -2500  448.
RE DISCCART    100   -2000  458
RE DISCCART    100   -1500. 468
RE DISCCART    100   -1000. 476.
RE DISCCART    100.   -750  482
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RE DISCCART    100.   -500  474
RE DISCCART    100.   -400. 475
RE DISCCART    100.   -300. 475
RE DISCCART    100    -200. 466.
RE DISCCART    100    -100  466.
RE DISCCART    100     100  466.
RE DISCCART    100.    200  466.
RE DISCCART    100     300  466.
RE DISCCART    100     400  459.
RE DISCCART    100     500  457.
RE DISCCART    100     750  456
RE DISCCART    100    1000. 470
RE DISCCART    100    1500  476
RE DISCCART    100    2000  486
RE DISCCART    100.   2500  478.
RE DISCCART    200.  -2500  448
RE DISCCART    200   -2000  458
RE DISCCART    200   -1500. 468.
RE DISCCART    200   -1000. 477
RE DISCCART    200.   -750. 480
RE DISCCART    200    -500  478
RE DISCCART    200    -400  477
RE DISCCART    200    -300. 477
RE DISCCART    200    -200  470
RE DISCCART    200    -100. 470
RE DISCCART    200     100. 470
RE DISCCART    200.    200. 470
RE DISCCART    200     300  468
RE DISCCART    200     400. 462.
RE DISCCART    200     500. 457.
RE DISCCART    200     750  455.
RE DISCCART    200    1000  465
RE DISCCART    200    1500  474.
RE DISCCART    200    2000  483.
RE DISCCART    200    2500  476.
RE DISCCART    300   -2500. 452.
RE DISCCART    300   -2000. 468
RE DISCCART    300   -1500  473
RE DISCCART    300   -1000  482
RE DISCCART    300    -750. 483.
RE DISCCART    300    -500. 477
RE DISCCART    300    -400  477
RE DISCCART    300    -300  476
RE DISCCART    300.   -200. 474.
RE DISCCART    300.   -100. 475.
RE DISCCART    300.    100. 473
RE DISCCART    300.    200  470
RE DISCCART    300.    300  467
RE DISCCART    300     400  463
RE DISCCART    300     500  457
RE DISCCART    300     750  454
RE DISCCART    300    1000. 462.
RE DISCCART    300    1500. 476.
RE DISCCART    300.   2000  477.
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RE DISCCART    300   2500. 474
RE DISCCART    400  -2500. 457
RE DISCCART    400  -2000  469
RE DISCCART    400  -1500  475
RE DISCCART    400. -1000  486.
RE DISCCART    400.  -750. 486
RE DISCCART    400   -500. 477
RE DISCCART    400   -400. 476
RE DISCCART    400   -300  473
RE DISCCART    400.  -200  469.
RE DISCCART    400   -100  468.
RE DISCCART    400    100. 468
RE DISCCART    400    200  468
RE DISCCART    400    300  465
RE DISCCART    400    400  462
RE DISCCART    400    500  455.
RE DISCCART    400    750. 454
RE DISCCART    400   1000  454
RE DISCCART    400.  1500  468
RE DISCCART    400.  2000  473.
RE DISCCART    400   2500. 473
RE DISCCART    500  -2500. 462
RE DISCCART    500. -2000. 468
RE DISCCART    500  -1500  478
RE DISCCART    500  -1000  487
RE DISCCART    500   -750  486.
RE DISCCART    500   -500  478
RE DISCCART    500   -400. 479
RE DISCCART    500.  -300  481
RE DISCCART    500   -200  481
RE DISCCART    500   -100. 477
RE DISCCART    500    100. 473
RE DISCCART    500.   200  468
RE DISCCART    500    300  465
RE DISCCART    500    400  457
RE DISCCART    500    500. 454
RE DISCCART    500    750  454
RE DISCCART    500.  1000  454
RE DISCCART    500.  1500  471
RE DISCCART    500   2000  472
RE DISCCART    500   2500  472.
RE DISCCART    750. -2500  462
RE DISCCART    750  -2000  474
RE DISCCART    750  -1500  483
RE DISCCART    750  -1000. 493.
RE DISCCART    750   -750. 488.
RE DISCCART    750.  -500  494.
RE DISCCART    750.  -400  494
RE DISCCART    750.  -300  487
RE DISCCART    750   -200  487
RE DISCCART    750   -100  484
RE DISCCART    750    100  482
RE DISCCART    750    200. 477.
RE DISCCART    750    300. 474.
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RE DISCCART     750     400. 472.
RE DISCCART     750     500  465.
RE DISCCART     750.    750  458
RE DISCCART     750    1000  454.
RE DISCCART     750    1500. 457
RE DISCCART     750.   2000  464
RE DISCCART     750.   2500  473
RE DISCCART    1000. -2500   464
RE DISCCART    1000. -2000   480.
RE DISCCART    1000. -1500   482.
RE DISCCART    1000. -1000.  501
RE DISCCART    1000.  -750.  490
RE DISCCART    1000.  -500   493
RE DISCCART    1000   -400.  493.
RE DISCCART    1000   -300.  493
RE DISCCART    1000   -200.  484
RE DISCCART    1000   -100.  483.
RE DISCCART    1000    100   483.
RE DISCCART    1000    200.  481.
RE DISCCART    1000    300   477.
RE DISCCART    1000    400   476
RE DISCCART    1000.   500   472
RE DISCCART    1000    750   467
RE DISCCART    1000   1000   463
RE DISCCART    1000   1500.  456.
RE DISCCART    1000   2000   466
RE DISCCART    1000.  2500   483
RE DISCCART    1500  -2500   455
RE DISCCART    1500  -2000   473
RE DISCCART    1500  -1500   481.
RE DISCCART    1500  -1000.  487.
RE DISCCART    1500.  -750   492
RE DISCCART    1500   -500   487
RE DISCCART    1500   -400   487
RE DISCCART    1500   -300.  486.
RE DISCCART    1500.  -200   485
RE DISCCART    1500   -100   483
RE DISCCART    1500    100   483
RE DISCCART    1500    200   483
RE DISCCART    1500    300.  483.
RE DISCCART    1500.   400.  483.
RE DISCCART    1500    500   483
RE DISCCART    1500    750.  483
RE DISCCART    1500   1000.  476.
RE DISCCART    1500   1500.  468.
RE DISCCART    1500.  2000.  464.
RE DISCCART    1500.  2500   475.
RE DISCCART    2000. -2500   454
RE DISCCART    2000. -2000   468
RE DISCCART    2000  -1500   473
RE DISCCART    2000  -1000   485
RE DISCCART    2000   -750   493
RE DISCCART    2000   -500.  493.
RE DISCCART    2000.  -400   489
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RE DISCCART   2000    -300  486.
RE DISCCART   2000    -200  484.
RE DISCCART   2000    -100. 486
RE DISCCART   2000     100. 486
RE DISCCART   2000.    200  487
RE DISCCART   2000.    300  487.
RE DISCCART   2000     400. 487
RE DISCCART   2000     500. 487
RE DISCCART   2000.    750  492
RE DISCCART   2000    1000  487.
RE DISCCART   2000    1500  470.
RE DISCCART   2000    2000  464
RE DISCCART   2000    2500. 465
RE DISCCART   2500   -2500  454
RE DISCCART   2500   -2000  473
RE DISCCART   2500.  -1500  468
RE DISCCART   2500.  -1000. 483
RE DISCCART   2500.   -750  484
RE DISCCART   2500.   -500  484
RE DISCCART   2500    -400  484.
RE DISCCART   2500    -300. 484
RE DISCCART   2500    -200  484
RE DISCCART   2500    -100. 484
RE DISCCART   2500     100. 489
RE DISCCART   2500     200. 494
RE DISCCART   2500     300. 497
RE DISCCART   2500     400  497
RE DISCCART   2500     500  497.
RE DISCCART   2500     750. 497.
RE DISCCART   2500.   1000  493
RE DISCCART   2500    1500  484
RE DISCCART   2500    2000  473
RE DISCCART   2500    2500  468.
RE DISCCART     10000.  10000   475
RE DISCCART     10000   -10000   475
RE DISCCART         0   -10000   475
RE DISCCART         0   10000   475.
RE DISCCART    -10000.  10000   475.
RE DISCCART    -10000.  -10000   475
RE DISCCART     15000   15000   475.
RE DISCCART     15000   -15000.  475.
RE DISCCART         0   -15000   475.
RE DISCCART         0    15000.  475
RE DISCCART     15000        0.  475
RE DISCCART    -15000         0   475
RE DISCCART    -15000    15000   475
RE DISCCART    -15000   -15000.  475
RE DISCCART         0   -17500   475.
RE DISCCART      5000   -17500   475.
RE DISCCART    10000.   -17500   475.
RE DISCCART    15000.   -17500   475
RE DISCCART    -5000.   -17500   475.
RE DISCCART  -10000.    -17500   475
RE DISCCART  -15000.    -17500   475.
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RE DISCCART    20000   20000.  475
RE DISCCART    20000    -20000.  475
RE DISCCART        0    -20000.  475.
RE DISCCART       0.    20000   475.
RE DISCCART   -20000    20000   475
RE DISCCART   -20000    -20000.  475
RE DISCCART    2500   -5000.  475
RE DISCCART    2500   -7500.  475
RE DISCCART    2500. -10000   475
RE DISCCART    2500. -12500.  475
RE DISCCART    2500  -15000   475
RE DISCCART    2500  -17500   475.
RE DISCCART    2500  -20000.  475
RE DISCCART   -5000.  -2500   475
RE DISCCART   10000   -2500.  475
RE DISCCART   15000   -2500.  475
RE DISCCART   20000.  -2500.  475
RE DISCCART  -15000.  20000.  475
RE DISCCART  -10000   20000.  475.
RE DISCCART   -5000   20000.  475
RE DISCCART    5000   20000.  475
RE DISCCART   10000.  20000.  475
RE DISCCART   15000   20000   475
RE DISCCART  -20000   15000   475
RE DISCCART  -10000   15000   475
RE DISCCART   -5000   15000.  475.
RE DISCCART    5000   15000.  475.
RE DISCCART   10000.  15000.  475
RE DISCCART   20000   15000.  475
RE DISCCART  -20000   10000.  475
RE DISCCART  -15000.  10000.  475
RE DISCCART   -5000   10000.  475
RE DISCCART    5000   10000   475
RE DISCCART   15000   10000   475
RE DISCCART   20000   10000   475
RE DISCCART  -20000    5000.  475.
RE DISCCART  -15000    5000.  475
RE DISCCART  -10000.   5000   475
RE DISCCART   -5000    5000   475.
RE DISCCART       0    5000   475.
RE DISCCART    5000.   5000.  475
RE DISCCART   10000    5000   475
RE DISCCART   15000    5000.  475
RE DISCCART   20000    5000.  475
RE DISCCART  -20000       0.  475
RE DISCCART  -10000.      0.  475.
RE DISCCART   -5000       0.  475
RE DISCCART    5000       0   475
RE DISCCART   10000       0   475
RE DISCCART   20000.      0   475.
RE DISCCART  -20000   -5000   475
RE DISCCART  -15000   -5000   475
RE DISCCART  -10000   -5000.  475.
RE DISCCART   -5000   -5000.  475
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RE DISCCART       0    -5000.  475.
RE DISCCART    5000    -5000.  475
RE DISCCART   10000.   -5000   475
RE DISCCART   15000    -5000.  475
RE DISCCART   20000    -5000.  475
RE DISCCART  -20000   -10000.  475.
RE DISCCART  -15000   -10000.  475
RE DISCCART   -5000.  -10000.  475
RE DISCCART    5000.  -10000   475
RE DISCCART   15000   -10000.  475
RE DISCCART   20000   -10000   475
RE DISCCART  -20000   -15000   475.
RE DISCCART  -10000.  -15000.  475
RE DISCCART   -5000.  -15000   475
RE DISCCART    5000   -15000   475
RE DISCCART   10000.  -15000   475
RE DISCCART   20000.  -15000   475.
RE DISCCART  -15000.  -20000.  475
RE DISCCART  -10000   -20000   475
RE DISCCART   -5000   -20000   475
RE DISCCART    5000   -20000   475
RE DISCCART   10000   -20000.  475.
RE DISCCART   15000.  -20000.  475
RE FINISHED
**  The MEteorology pathway begins here
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used  The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model  There are gaps in the met data.
   INPUTFIL  ISCST294.DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The OUtput pathway begins here
OU STARTING
**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the Cdn. Ambient Air Qual  Objective for
**  sulfur dioxide 24-hour is 300 ug/Nm^3 (acceptable).
   MAXIFILE  24  STATION  300 0   MAX24SO2 FIL 21
   MAXIFILE  24  OPENPIT 300.0 MAX24SO2 FIL 21
**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
```

```
   PLOTFILE  1  STATION 1ST K2001SO1 FST 24
   PLOTFILE  1 OPENPIT 1ST K2001SO1 FST 24
   PLOTFILE  24  STATION 1ST K2001SO2.FST 23
   PLOTFILE  24  OPENPIT 1ST K2001SO2.FST 23
   PLOTFILE  PERIOD STATION  K2001SO3 FST 26
   PLOTFILE  PERIOD OPENPIT  K2001SO3 FST 26
OU FINISHED
```

APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No  4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is SO2
**
** All met data is from the Koala Camp Weather Station.
** To run the model type:
**
**    ISCST2EM K2001SO2 INP K2001SO2.OUT
**
** The results for this problem are provided in file K2001SO2.OUT
**
**NOTE: THE DIESEL POWER PLANT STACK HEIGHT HAS BEEN INCREASED FROM
** 16.9 M TO 22 9 M. THE FUEL FOR THE DIESEL POWER STATION CONTAINS
** 0.05 WT % SULPHUR.  THE EVENTS PROCESSOR WILL NOT BE USED FOR THIS
** MODEL ITERATION   THE DIESEL GENERATORS @ 70% OF FULL LOAD WILL BE
**  USED TO PLOT 24-HOUR AND 7,416 HOUR SO2 CONCENTRATIONS.
**
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds SO2
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1 24  PERIOD
   POLLUTID  SO2
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
   ERRORFIL  ERRORSO2 OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
SO LOCATION  CAT3616A  POINT    43 0    45 0    466 0
**  The diesel power plant will operate at 70% of full load for 24 h/day
**  The emission rates have already been adjusted, so use an emission
**  factor of 1 0
SO EMISFACT  CAT3616A  HROFDY  24*1 0
SO LOCATION  CAT3616B  POINT    43.0    51 0    466 0
SO EMISFACT  CAT3616B  HROFDY  24*1 0
SO LOCATION  CAT3616C  POINT    43.0    57 0    466 0
SO EMISFACT  CAT3616C  HROFDY  24*1 0
SO LOCATION  CAT3616D  POINT    43 0    63.0    466 0
SO EMISFACT  CAT3616D  HROFDY  24*1.0
SO LOCATION  GLYBOILA  POINT    12.0  -188 0    466 0
**  The diesel fired heating boilers both operate Dec -Mar., one boiler operates
**  Sept , Oct , Nov. and Apr., no boiler operation May to August;
**  adjust emission factors accordingly   Each boiler runs at avg  75% of full
**  load.  Assume Cleaver Brooks boilers
SO EMISFACT  GLYBOILA  MONTH   3*0 75  8*0 0  1*0 75
SO LOCATION  GLYBOILB  POINT    17.0  -188.0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0 75  4*0 0   4*0 75
**  The diesel generators will use 0.05% wt. sulfur fuel, the heating boilers
**  will use No  2 distillate fuel @ 0 2% wt  sulfur (no emission data avail.
**  for low sulfur fuel).
** Point Sources        QS      HS     TS     VS    DS
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** Parameters:          ----   ----  ----  ----  ---
   SRCPARAM  CAT3616A  0 181   22 9   712    20 2   0 9
   SRCPARAM  CAT3616B  0 181   22.9   712.   20 2   0 9
   SRCPARAM  CAT3616C  0 181   22 9   712    20 2   0 9
   SRCPARAM  CAT3616D  0.181   22 9   712.   20.2   0.9
   SRCPARAM  GLYBOILA  0.41    11 5   433.    7.0   0.6
   SRCPARAM  GLYBOILB  0 41    11 5   433.    7 0   0.6
**  Building heights and widths are input for calculation of building
**  downwash.  Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise.
   BUILDHGT  CAT3616A  36*13.9
   BUILDWID  CAT3616A   0.0    0 0    0 0    0.0    0.0    0 0    0 0    0 0
             CAT3616A   0 0    0 0    0.0    0 0    0 0    0 0    0 0    0 0
             CAT3616A   0.0    3.00   3 05   3 19   3 46   3 92   4 67   6 00
             CAT3616A   8.77 17 28 30 00 30.46 31 93 34.64 39.16 46.67
             CAT3616A  60 00 54 27 51.79 51 00
   BUILDHGT  CAT3616B  36*13 9
   BUILDWID  CAT3616B   0 0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616B   0.0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616B   0 0    9 00   9 14   9.58 10 39 11 75 14 00 18 00
             CAT3616B  26 31 30 46 30.00 30 46 31 93 34 64 39.16 46 67
             CAT3616B  51 96 47 89 45 69 45 00
   BUILDHGT  CAT3616C  36*13 9
   BUILDWID  CAT3616C   0 0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616C   0.0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616C   0 0   15 00 15 23 15.96 17 32 19.58 23 33 30 00
             CAT3616C  31 93 30 46 30.00 30 46 31 93 34.64 39.16 46 67
             CAT3616C  45 03 41 50 39 60 39 00
   BUILDHGT  CAT3616D  36*13.9
   BUILDWID  CAT3616D   0.0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616D   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616D   0 0   21 00 21.32 22.35 24 25 27 41 32 67 34 64
             CAT3616D  31.93 30 46 30 00 30 46 31 93 34 64 39 16 43 08
             CAT3616D  38.11 35.12 33 51 33 00
   BUILDHGT  GLYBOILA  36*8 5
   BUILDWID  GLYBOILA  2 03   2 13   2 31   2.61   3.11 4 00   5 85   11 52
             GLYBOILA 21 00 21.32 22.35 14 00 10.89   9.14   8 08   7 45
             GLYBOILA  7 11   7.00   7 11   7 45   8.08   9.14 10 89 14 00
             GLYBOILA 22.35 28.43 28 00 21 00 11 52   5.85   4.00   3 11
             GLYBOILA  2 61   2.31   2 13   2 00
   BUILDHGT  GLYBOILB  36*8 5
   BUILDWID  GLYBOILB  2 03   2 13   2.31   2.61   3 11   4 00   5 85 11 52
             GLYBOILB 16 00 16 25 17.03 14 00 10 89   9 14   8.08   7 45
             GLYBOILB  7 11   7.00   7 11   7 45   8.08   9.14 10.89 14 00
             GLYBOILB 22 35 33 51 33 00 21 00 11 52   5 85   4.00   3 11
             GLYBOILB  2.61   2 31   2 13   2 00

**  The open pits are also sources of SO2 emissions from mobile equipment
**  Firstly, Panda Pit.
SO LOCATION  PANDAP AREA 1300. 1200. 460.
SO SRCPARAM  PANDAP 0.00000468 1.0 600.0

**  Secondly, Koala Pit
SO LOCATION  KOALAP AREA 500  300. 460
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SO SRCPARAM  KOALAP 0 00000456 1.0 350.0


**  The Sources are divided into two different groups below:
SO SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D
SO SRCGROUP  STATION  GLYBOILA GLYBOILB
SO SRCGROUP  OPENPIT  PANDAP KOALAP
SO FINISHED
** Details for the REceptor grid are provided below
RE STARTING
** A total of 498 discrete receptors will be used
RE DISCCART  -2500. -2500  457
RE DISCCART  -2500. -2000  456
RE DISCCART  -2500. -1500  456
RE DISCCART  -2500. -1000. 453
RE DISCCART  -2500.  -750  453
RE DISCCART  -2500.  -500  459
RE DISCCART  -2500.  -400  468
RE DISCCART  -2500.  -300. 468.
RE DISCCART  -2500.  -200  467
RE DISCCART  -2500.  -100  466
RE DISCCART  -2500    100  467
RE DISCCART  -2500    200  468.
RE DISCCART  -2500    300  473.
RE DISCCART  -2500.   400. 475.
RE DISCCART  -2500    500  478
RE DISCCART  -2500    750  485
RE DISCCART  -2500   1000  485
RE DISCCART  -2500.  1500  485
RE DISCCART  -2500   2000  501
RE DISCCART  -2500   2500  501
RE DISCCART  -2000  -2500  455
RE DISCCART  -2000  -2000  458
RE DISCCART  -2000. -1500. 457.
RE DISCCART  -2000  -1000  453
RE DISCCART  -2000   -750  450
RE DISCCART  -2000   -500  448
RE DISCCART  -2000   -400  448.
RE DISCCART  -2000   -300. 448.
RE DISCCART  -2000.  -200. 448.
RE DISCCART  -2000.  -100. 451.
RE DISCCART  -2000.   100  466.
RE DISCCART  -2000.   200  464
RE DISCCART  -2000.   300. 465
RE DISCCART  -2000    400  469
RE DISCCART  -2000.   500. 473.
RE DISCCART  -2000    750  480.
RE DISCCART  -2000   1000  478
RE DISCCART  -2000.  1500. 492
RE DISCCART  -2000.  2000. 494.
RE DISCCART  -2000.  2500. 505.
RE DISCCART  -1500. -2500. 448.
RE DISCCART  -1500. -2000  452.
RE DISCCART  -1500  -1500  455
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RE DISCCART  -1500  -1000. 460.
RE DISCCART  -1500   -750. 454.
RE DISCCART  -1500   -500  454
RE DISCCART  -1500.  -400  454
RE DISCCART  -1500   -300  454.
RE DISCCART  -1500   -200  454.
RE DISCCART  -1500   -100. 454
RE DISCCART  -1500.   100  454
RE DISCCART  -1500.   200  454
RE DISCCART  -1500.   300  456
RE DISCCART  -1500.   400  463.
RE DISCCART  -1500.   500  467.
RE DISCCART  -1500.   750. 477
RE DISCCART  -1500.  1000  477
RE DISCCART  -1500   1500  487
RE DISCCART  -1500   2000. 487.
RE DISCCART  -1500   2500. 497
RE DISCCART  -1000. -2500  448
RE DISCCART  -1000  -2000. 448.
RE DISCCART  -1000  -1500. 453
RE DISCCART  -1000  -1000. 453.
RE DISCCART  -1000.  -750  453.
RE DISCCART  -1000.  -500  453
RE DISCCART  -1000   -400  453
RE DISCCART  -1000   -300  456
RE DISCCART  -1000   -200  455
RE DISCCART  -1000   -100. 455.
RE DISCCART  -1000    100. 454
RE DISCCART  -1000.   200  454
RE DISCCART  -1000    300  454
RE DISCCART  -1000    400. 454.
RE DISCCART  -1000.   500  455
RE DISCCART  -1000    750  467
RE DISCCART  -1000   1000  479
RE DISCCART  -1000   1500  482
RE DISCCART  -1000   2000. 484.
RE DISCCART  -1000.  2500. 497.
RE DISCCART   -750. -2500. 448.
RE DISCCART   -750. -2000. 448.
RE DISCCART   -750. -1500  454.
RE DISCCART   -750. -1000  456.
RE DISCCART   -750.  -750. 455.
RE DISCCART   -750.  -500  456
RE DISCCART   -750.  -400  457
RE DISCCART   -750.  -300  460
RE DISCCART   -750.  -200  458.
RE DISCCART   -750.  -100. 460
RE DISCCART   -750.   100  454
RE DISCCART   -750.   200  454
RE DISCCART   -750    300  454
RE DISCCART   -750    400  455
RE DISCCART   -750    500  457
RE DISCCART   -750    750. 458
RE DISCCART   -750   1000. 474.
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RE DISCCART   -750   1500  487.
RE DISCCART   -750   2000  487.
RE DISCCART   -750.  2500. 499
RE DISCCART   -500. -2500  448
RE DISCCART   -500. -2000  448
RE DISCCART   -500. -1500. 457.
RE DISCCART   -500. -1000. 466.
RE DISCCART   -500.  -750  457
RE DISCCART   -500.  -500  457
RE DISCCART   -500.  -400  457
RE DISCCART   -500.  -300  457
RE DISCCART   -500.  -200. 456.
RE DISCCART   -500.  -100  455
RE DISCCART   -500.   100  454
RE DISCCART   -500.   200  454
RE DISCCART   -500.   300  454
RE DISCCART   -500.   400  454
RE DISCCART   -500.   500  455
RE DISCCART   -500    750  455
RE DISCCART   -500   1000  463
RE DISCCART   -500   1500  484
RE DISCCART   -500.  2000  485
RE DISCCART   -500   2500  501
RE DISCCART   -400  -2500  448
RE DISCCART   -400  -2000  450
RE DISCCART   -400  -1500  465
RE DISCCART   -400  -1000  457
RE DISCCART   -400   -750. 457
RE DISCCART   -400.  -500. 457.
RE DISCCART   -400   -400  457.
RE DISCCART   -400   -300. 455.
RE DISCCART   -400   -200. 455.
RE DISCCART   -400.  -100. 455
RE DISCCART   -400.   100  454.
RE DISCCART   -400.   200  454
RE DISCCART   -400.   300  454
RE DISCCART   -400.   400. 454
RE DISCCART   -400.   500. 454
RE DISCCART   -400    750  457
RE DISCCART   -400   1000  463
RE DISCCART   -400.  1500  475
RE DISCCART   -400   2000. 485
RE DISCCART   -400   2500  499
RE DISCCART   -300  -2500. 448.
RE DISCCART   -300  -2000. 457
RE DISCCART   -300  -1500. 467.
RE DISCCART   -300. -1000. 458
RE DISCCART   -300.  -750  458
RE DISCCART   -300.  -500. 462.
RE DISCCART   -300.  -400. 459.
RE DISCCART   -300   -300  455
RE DISCCART   -300   -200  454
RE DISCCART   -300   -100. 454
RE DISCCART   -300.   100  454.
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RE DISCCART   -300     200  454.
RE DISCCART   -300     300. 454
RE DISCCART   -300     400. 454
RE DISCCART   -300     500. 454
RE DISCCART   -300.    750. 462
RE DISCCART   -300    1000  466.
RE DISCCART   -300    1500  468.
RE DISCCART   -300    2000  487
RE DISCCART   -300    2500. 495
RE DISCCART   -200   -2500  448
RE DISCCART   -200.  -2000  462
RE DISCCART   -200   -1500  467
RE DISCCART   -200.  -1000  461
RE DISCCART   -200    -750. 462
RE DISCCART   -200.   -500  464
RE DISCCART   -200.   -400  462
RE DISCCART   -200.   -300  457.
RE DISCCART   -200    -200. 456
RE DISCCART   -200.   -100  457
RE DISCCART   -200     100  457
RE DISCCART   -200     200  457.
RE DISCCART   -200     300  457.
RE DISCCART   -200     400  456.
RE DISCCART   -200     500  454
RE DISCCART   -200.    750  460
RE DISCCART   -200    1000. 465.
RE DISCCART   -200    1500. 470.
RE DISCCART   -200    2000. 482.
RE DISCCART   -200    2500  490
RE DISCCART   -100.  -2500  448
RE DISCCART   -100   -2000  458
RE DISCCART   -100   -1500  469
RE DISCCART   -100   -1000  464
RE DISCCART   -100    -750. 467
RE DISCCART   -100    -500. 463
RE DISCCART   -100    -400  463
RE DISCCART   -100    -300  457
RE DISCCART   -100    -200  457.
RE DISCCART   -100    -100. 457.
RE DISCCART   -100     100  457
RE DISCCART   -100.    200  458
RE DISCCART   -100     300  458
RE DISCCART   -100     400. 460
RE DISCCART   -100     500. 454.
RE DISCCART   -100.    750. 460
RE DISCCART   -100.   1000. 463
RE DISCCART   -100    1500  470.
RE DISCCART   -100    2000. 482.
RE DISCCART   -100.   2500  483.
RE DISCCART    100.  -2500. 448.
RE DISCCART    100.  -2000. 458
RE DISCCART    100.  -1500  468
RE DISCCART    100.  -1000  476
RE DISCCART    100    -750  482
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RE DISCCART    100    -500  474
RE DISCCART    100.   -400. 475
RE DISCCART    100.   -300  475
RE DISCCART    100.   -200  466
RE DISCCART    100.   -100  466
RE DISCCART    100.    100. 466.
RE DISCCART    100     200. 466
RE DISCCART    100.    300. 466
RE DISCCART    100     400  459
RE DISCCART    100     500  457
RE DISCCART    100     750  456.
RE DISCCART    100    1000  470.
RE DISCCART    100    1500  476.
RE DISCCART    100.   2000  486.
RE DISCCART    100    2500  478.
RE DISCCART    200   -2500  448.
RE DISCCART    200   -2000. 458.
RE DISCCART    200   -1500  468
RE DISCCART    200.  -1000  477
RE DISCCART    200    -750  480
RE DISCCART    200    -500. 478
RE DISCCART    200.   -400  477
RE DISCCART    200    -300  477
RE DISCCART    200    -200  470
RE DISCCART    200    -100  470
RE DISCCART    200     100  470
RE DISCCART    200.    200. 470
RE DISCCART    200.    300  468
RE DISCCART    200     400  462
RE DISCCART    200     500  457
RE DISCCART    200     750  455
RE DISCCART    200    1000  465
RE DISCCART    200    1500  474
RE DISCCART    200    2000  483
RE DISCCART    200    2500  476
RE DISCCART    300   -2500. 452.
RE DISCCART    300.  -2000  468
RE DISCCART    300   -1500  473
RE DISCCART    300   -1000  482
RE DISCCART    300    -750. 483
RE DISCCART    300.   -500. 477.
RE DISCCART    300.   -400. 477.
RE DISCCART    300.   -300  476.
RE DISCCART    300.   -200  474
RE DISCCART    300.   -100. 475
RE DISCCART    300.    100. 473
RE DISCCART    300.    200  470.
RE DISCCART    300     300  467
RE DISCCART    300     400  463
RE DISCCART    300     500  457
RE DISCCART    300     750  454
RE DISCCART    300    1000  462
RE DISCCART    300.   1500. 476.
RE DISCCART    300.   2000. 477.
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RE DISCCART    300    2500. 474
RE DISCCART    400   -2500. 457
RE DISCCART    400   -2000  469
RE DISCCART    400. -1500   475
RE DISCCART    400. -1000   486.
RE DISCCART    400.  -750.  486
RE DISCCART    400.  -500   477
RE DISCCART    400.  -400   476
RE DISCCART    400.  -300   473
RE DISCCART    400.  -200   469.
RE DISCCART    400   -100.  468.
RE DISCCART    400    100.  468
RE DISCCART    400    200   468.
RE DISCCART    400.   300   465.
RE DISCCART    400    400   462.
RE DISCCART    400    500   455.
RE DISCCART    400.   750   454
RE DISCCART    400   1000   454
RE DISCCART    400   1500   468.
RE DISCCART    400   2000   473.
RE DISCCART    400   2500.  473.
RE DISCCART    500  -2500.  462
RE DISCCART    500. -2000   468
RE DISCCART    500  -1500   478
RE DISCCART    500  -1000   487
RE DISCCART    500   -750   486
RE DISCCART    500   -500.  478.
RE DISCCART    500   -400   479
RE DISCCART    500   -300   481
RE DISCCART    500   -200   481.
RE DISCCART    500.  -100   477
RE DISCCART    500    100   473
RE DISCCART    500    200   468
RE DISCCART    500    300.  465
RE DISCCART    500    400.  457.
RE DISCCART    500.   500   454
RE DISCCART    500    750   454
RE DISCCART    500   1000   454
RE DISCCART    500   1500   471
RE DISCCART    500   2000.  472.
RE DISCCART    500.  2500.  472.
RE DISCCART    750  -2500.  462.
RE DISCCART    750. -2000   474
RE DISCCART    750. -1500   483
RE DISCCART    750. -1000.  493.
RE DISCCART    750   -750.  488
RE DISCCART    750.  -500.  494.
RE DISCCART    750.  -400   494
RE DISCCART    750.  -300   487
RE DISCCART    750   -200   487
RE DISCCART    750   -100   484
RE DISCCART    750    100.  482
RE DISCCART    750.   200.  477.
RE DISCCART    750.   300.  474.
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RE DISCCART     750     400. 472
RE DISCCART     750.    500  465
RE DISCCART     750.    750  458
RE DISCCART     750.   1000  454
RE DISCCART     750    1500  457
RE DISCCART     750    2000. 464.
RE DISCCART     750.   2500. 473
RE DISCCART    1000   -2500  464
RE DISCCART    1000   -2000  480
RE DISCCART    1000   -1500  482.
RE DISCCART    1000   -1000  501
RE DISCCART    1000    -750. 490.
RE DISCCART    1000    -500  493
RE DISCCART    1000    -400  493
RE DISCCART    1000    -300  493.
RE DISCCART    1000    -200. 484.
RE DISCCART    1000    -100. 483.
RE DISCCART    1000     100  483.
RE DISCCART    1000     200  481.
RE DISCCART    1000     300  477.
RE DISCCART    1000.    400  476.
RE DISCCART    1000.    500  472.
RE DISCCART    1000     750  467
RE DISCCART    1000    1000  463
RE DISCCART    1000    1500  456.
RE DISCCART    1000    2000. 466.
RE DISCCART    1000    2500. 483.
RE DISCCART    1500. -2500   455.
RE DISCCART    1500   -2000  473
RE DISCCART    1500   -1500  481
RE DISCCART    1500   -1000. 487.
RE DISCCART    1500.   -750  492.
RE DISCCART    1500    -500  487.
RE DISCCART    1500    -400. 487.
RE DISCCART    1500    -300. 486.
RE DISCCART    1500    -200. 485.
RE DISCCART    1500.   -100. 483.
RE DISCCART    1500     100  483.
RE DISCCART    1500     200. 483.
RE DISCCART    1500     300. 483.
RE DISCCART    1500     400. 483.
RE DISCCART    1500.    500. 483.
RE DISCCART    1500.    750  483
RE DISCCART    1500.   1000  476
RE DISCCART    1500    1500  468
RE DISCCART    1500    2000  464
RE DISCCART    1500    2500  475
RE DISCCART    2000   -2500. 454.
RE DISCCART    2000   -2000  468
RE DISCCART    2000   -1500  473
RE DISCCART    2000   -1000  485
RE DISCCART    2000    -750  493
RE DISCCART    2000    -500. 493
RE DISCCART    2000.   -400  489.
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RE DISCCART   2000    -300  486.
RE DISCCART   2000.   -200  484.
RE DISCCART   2000.   -100  486.
RE DISCCART   2000     100  486
RE DISCCART   2000     200  487
RE DISCCART   2000.    300  487
RE DISCCART   2000.    400  487
RE DISCCART   2000     500  487
RE DISCCART   2000     750  492.
RE DISCCART   2000.   1000. 487
RE DISCCART   2000    1500. 470
RE DISCCART   2000    2000  464
RE DISCCART   2000.   2500  465
RE DISCCART   2500   -2500  454
RE DISCCART   2500   -2000. 473
RE DISCCART   2500.  -1500  468
RE DISCCART   2500.  -1000  483
RE DISCCART   2500.   -750. 484.
RE DISCCART   2500.   -500  484
RE DISCCART   2500    -400  484
RE DISCCART   2500    -300. 484
RE DISCCART   2500    -200. 484.
RE DISCCART   2500    -100. 484.
RE DISCCART   2500     100. 489.
RE DISCCART   2500     200. 494.
RE DISCCART   2500     300. 497
RE DISCCART   2500.    400  497
RE DISCCART   2500     500  497
RE DISCCART   2500     750. 497.
RE DISCCART   2500    1000. 493
RE DISCCART   2500    1500. 484
RE DISCCART   2500    2000. 473
RE DISCCART   2500    2500  468.
RE DISCCART     10000.  10000.  475
RE DISCCART     10000.  -10000.  475
RE DISCCART         0.  -10000   475
RE DISCCART         0.  10000   475
RE DISCCART    -10000    10000   475
RE DISCCART    -10000   -10000   475.
RE DISCCART     15000.  15000.  475
RE DISCCART     15000   -15000   475
RE DISCCART         0   -15000.  475
RE DISCCART         0    15000.  475.
RE DISCCART     15000        0.  475
RE DISCCART    -15000         0   475
RE DISCCART    -15000    15000   475
RE DISCCART    -15000   -15000   475
RE DISCCART         0   -17500   475.
RE DISCCART      5000   -17500   475
RE DISCCART     10000   -17500   475.
RE DISCCART     15000.  -17500.  475.
RE DISCCART     -5000.  -17500.  475
RE DISCCART    -10000   -17500.  475
RE DISCCART    -15000   -17500.  475
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RE DISCCART    20000.  20000.  475
RE DISCCART    20000   -20000   475
RE DISCCART        0   -20000   475.
RE DISCCART        0    20000   475.
RE DISCCART   -20000.  20000.  475.
RE DISCCART   -20000.  -20000.  475.
RE DISCCART    2500   -5000   475
RE DISCCART    2500   -7500.  475.
RE DISCCART    2500  -10000.  475
RE DISCCART    2500  -12500.  475.
RE DISCCART    2500. -15000.  475
RE DISCCART    2500. -17500.  475
RE DISCCART    2500  -20000   475
RE DISCCART   -5000   -2500   475
RE DISCCART   10000   -2500   475.
RE DISCCART   15000.  -2500.  475
RE DISCCART   20000   -2500.  475
RE DISCCART  -15000   20000   475
RE DISCCART  -10000   20000.  475.
RE DISCCART   -5000   20000.  475
RE DISCCART    5000   20000   475
RE DISCCART   10000   20000   475
RE DISCCART   15000   20000   475
RE DISCCART  -20000   15000   475
RE DISCCART  -10000   15000.  475.
RE DISCCART   -5000.  15000.  475
RE DISCCART    5000   15000   475
RE DISCCART   10000   15000   475
RE DISCCART   20000   15000   475.
RE DISCCART  -20000.  10000.  475.
RE DISCCART  -15000   10000   475.
RE DISCCART   -5000   10000   475.
RE DISCCART    5000.  10000   475
RE DISCCART   15000   10000   475
RE DISCCART   20000.  10000   475
RE DISCCART  -20000.   5000.  475.
RE DISCCART  -15000.   5000.  475.
RE DISCCART  -10000    5000   475
RE DISCCART   -5000    5000.  475
RE DISCCART       0    5000.  475
RE DISCCART    5000    5000   475
RE DISCCART   10000    5000.  475.
RE DISCCART   15000    5000.  475.
RE DISCCART   20000.   5000   475.
RE DISCCART  -20000.      0   475.
RE DISCCART  -10000       0   475
RE DISCCART   -5000       0   475
RE DISCCART    5000.      0.  475
RE DISCCART   10000       0.  475.
RE DISCCART   20000       0   475
RE DISCCART  -20000.  -5000   475
RE DISCCART  -15000   -5000   475.
RE DISCCART  -10000   -5000   475.
RE DISCCART   -5000   -5000   475
```

```
RE DISCCART       0    -5000   475.
RE DISCCART    5000    -5000.  475
RE DISCCART   10000    -5000.  475
RE DISCCART   15000    -5000.  475
RE DISCCART   20000.   -5000   475
RE DISCCART  -20000.  -10000   475.
RE DISCCART  -15000   -10000.  475.
RE DISCCART   -5000.  -10000.  475
RE DISCCART    5000.  -10000.  475
RE DISCCART   15000   -10000.  475
RE DISCCART   20000.  -10000   475
RE DISCCART  -20000   -15000   475
RE DISCCART  -10000   -15000   475.
RE DISCCART   -5000   -15000.  475.
RE DISCCART    5000.  -15000   475.
RE DISCCART   10000   -15000   475.
RE DISCCART   20000   -15000   475.
RE DISCCART  -15000   -20000   475.
RE DISCCART  -10000.  -20000.  475
RE DISCCART   -5000   -20000   475.
RE DISCCART    5000   -20000   475
RE DISCCART   10000   -20000   475.
RE DISCCART   15000   -20000   475.
RE FINISHED
**  The MEteorology pathway begins here
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used   The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model. There are gaps in the met data
   INPUTFIL  ISCST294 DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The OUtput pathway begins here
OU STARTING
**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the Cdn  Ambient Air Qual  Objective for
**  sulfur dioxide 24-hour is 300 ug/Nm^3 (acceptable).
   MAXIFILE  24  STATION  300.0   MAX24SO2 FIL 21
   MAXIFILE  24  OPENPIT 300.0 MAX24SO2 FIL 21
**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
```

```
   PLOTFILE  1  STATION 1ST K2001SO1 FST 24
   PLOTFILE  1 OPENPIT 1ST K2001SO1 FST 24
   PLOTFILE  24  STATION 1ST K2001SO2.FST 23
   PLOTFILE  24  OPENPIT 1ST K2001SO2.FST 23
   PLOTFILE  PERIOD STATION  K2001SO3 FST 26
   PLOTFILE  PERIOD OPENPIT  K2001SO3 FST 26
OU FINISHED
```

APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No  4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is NOx-NO2
**
** All met data is from the Koala Camp Weather Station
** To run the model type:
**
**    ISCST2EM K2001NO2 INP K2001NO2 OUT
**
** The results for this problem are provided in file K2001NO2 OUT
**
**NOTE: THE STACK HEIGHT FOR THE DIESEL POWER PLANT STACKS HAS BEEN
** INCREASED FROM 16 9 M TO 22 9 M  THE FUEL FOR THE DIESEL POWER STATION
**  CONTAINS 0 05 WT % SULPHUR   THE EVENTS PROCESSOR WILL BE USED FOR THIS
**  MODEL ITERATION   THE DIESEL GENERATORS @ 70% OF FULL LOAD WILL BE USED
**  TO PLOT 24-HOUR AND 7,416 HOUR NO2 CONCENTRATIONS  THE DIESEL POWER
**  PLANT EMISSION RATES HAVE BEEN INCREASED BY 15% TO ACCOUNT FOR ENGINE
**  TO ENGINE VARIABILITY AND TEST VARIABILITY.
**
**
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds NOx-NO2
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  24  PERIOD
   POLLUTID  NOx
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
** EVENTFIL  EVE24NOX INP  DETAIL
   ERRORFIL  ERRORNOX OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
SO LOCATION  CAT3616A  POINT    43 0    45 0    466.0
**  The diesel power plant will operate at 70% of full load for 24 h/day
**  The emission rates have already been adjusted, so use a emission
**  factor of 1 0
SO EMISFACT  CAT3616A  HROFDY  24*1.0
SO LOCATION  CAT3616B  POINT    43 0    51 0    466 0
SO EMISFACT  CAT3616B  HROFDY  24*1 0
SO LOCATION  CAT3616C  POINT    43.0    57 0    466 0
SO EMISFACT  CAT3616C  HROFDY  24*1.0
SO LOCATION  CAT3616D  POINT    43.0    63.0    466 0
SO EMISFACT  CAT3616D  HROFDY  24*1 0
SO LOCATION  GLYBOILA  POINT    12 0  -188.0    466 0
**  The diesel fired heating boilers both operate Dec -Mar., one boiler operates
**  Sept., Oct , Nov  and Apr , no boiler operation May to August;
**  adjust emission factors accordingly   Each boiler runs at avg  75% of full
**  load
SO EMISFACT  GLYBOILA  MONTH   3*0 75  8*0 0  1*0 75
SO LOCATION  GLYBOILB  POINT    17.0  -188 0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0.75  4*0 0   4*0.75
```

```
**  The diesel generators will use 0 05% wt  sulfur fuel, the heating boilers
**  by Cleaver Brooks will use No  2 distillate fuel @ 0.2% wt  sulfur,
**  no emission estimates are avail  for boilers using low sulfur fuel
** Point Sources          QS      HS     TS     VS    DS
** Parameters:           ----    ----   ----   ----  ---
SO SRCPARAM  CAT3616A  21.2    22.9   712    20 2   0 9
SO SRCPARAM  CAT3616B  21.2    22 9   712    20 2   0 9
SO SRCPARAM  CAT3616C  21 2    22 9   712    20.2   0 9
SO SRCPARAM  CAT3616D  21 2    22 9   712    20 2   0 9
SO SRCPARAM  GLYBOILA  0 29    11 5   433.    7 0   0 6
SO SRCPARAM  GLYBOILB  0 29    11 5   433.    7.0   0.6


**  Building heights and widths are input for calculation of building
**  downwash   Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise.
   BUILDHGT  CAT3616A  36*13.9
   BUILDWID  CAT3616A   0 0    0 0    0 0    0 0    0 0    0 0    0.0    0 0
             CAT3616A   0 0    0 0    0.0    0 0    0 0    0 0    0.0    0.0
             CAT3616A   0.0    3.00   3.05   3.19   3 46   3 92   4.67   6 00
             CAT3616A   8.77 17.28 30.00 30 46 31 93 34 64 39.16 46 67
             CAT3616A  60 00 54 27 51.79 51 00
   BUILDHGT  CAT3616B  36*13 9
   BUILDWID  CAT3616B   0 0    0 0    0.0    0 0    0 0    0 0    0.0    0.0
             CAT3616B   0.0    0 0    0.0    0.0    0 0    0 0    0.0    0 0
             CAT3616B   0.0    9.00   9.14   9 58 10.39 11 75 14.00 18 00
             CAT3616B  26.31 30 46 30.00 30 46 31 93 34 64 39 16 46 67
             CAT3616B  51.96 47 89 45 69 45 00
   BUILDHGT  CAT3616C  36*13 9
   BUILDWID  CAT3616C   0.0    0 0    0.0    0 0    0 0    0 0    0 0    0 0
             CAT3616C   0.0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616C   0 0   15 00 15 23 15 96 17 32 19.58 23 33 30 00
             CAT3616C  31 93 30 46 30 00 30 46 31 93 34.64 39.16 46 67
             CAT3616C  45.03 41.50 39.60 39.00
   BUILDHGT  CAT3616D  36*13.9
   BUILDWID  CAT3616D   0 0    0 0    0 0    0 0    0.0    0 0    0 0    0.0
             CAT3616D   0 0    0.0    0 0    0.0    0.0    0 0    0 0    0.0
             CAT3616D   0 0   21 00 21 32 22 35 24.25 27 41 32.67 34 64
             CAT3616D  31.93 30 46 30.00 30 46 31 93 34 64 39.16 43 08
             CAT3616D  38.11 35 12 33.51 33 00
   BUILDHGT  GLYBOILA  36*8 5
   BUILDWID  GLYBOILA  2 03   2.13   2 31   2.61   3 11 4 00   5.85  11 52
             GLYBOILA 21 00 21 32 22 35 14 00 10 89   9 14   8.08   7.45
             GLYBOILA  7 11   7 00   7 11   7 45   8.08   9 14 10.89 14 00
             GLYBOILA 22.35 28 43 28.00 21 00 11 52   5.85   4 00   3 11
             GLYBOILA  2.61   2.31   2.13   2.00
   BUILDHGT  GLYBOILB  36*8.5
   BUILDWID  GLYBOILB  2 03   2.13   2 31   2.61   3.11   4.00   5 85 11.52
             GLYBOILB 16 00 16.25 17 03 14 00 10.89   9.14   8 08   7 45
             GLYBOILB  7.11   7.00   7 11   7 45   8 08   9.14 10 89 14 00
             GLYBOILB 22.35 33 51 33 00 21 00 11 52   5.85   4.00   3.11
             GLYBOILB  2.61   2 31   2 13   2 00

**  The open pits are also sources of NO2 emissions from mobile equipment
```

```
**  Firstly, Panda Pit.
SO LOCATION  PANDAP AREA 1300  1200. 460.
SO SRCPARAM  PANDAP 0 0000579 1.0 600 0
**  Secondly, Koala Pit.
SO LOCATION  KOALAP AREA 500. 300. 460.
SO SRCPARAM  KOALAP 0.0000575 1 0 350 0
**  The Sources are divided into two different groups below:
   SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D
   SRCGROUP  STATION  GLYBOILA GLYBOILB
   SRCGROUP  OPENPIT  PANDAP KOALAP
SO FINISHED
** Details for the REceptor grid are provided below.
RE STARTING
** A total of 498 discrete receptors will be used.
RE DISCCART  -2500  -2500. 457
RE DISCCART  -2500  -2000  456
RE DISCCART  -2500  -1500  456.
RE DISCCART  -2500  -1000. 453
RE DISCCART  -2500.  -750. 453.
RE DISCCART  -2500   -500  459
RE DISCCART  -2500.  -400  468
RE DISCCART  -2500   -300  468
RE DISCCART  -2500   -200  467
RE DISCCART  -2500.  -100  466
RE DISCCART  -2500.   100  467
RE DISCCART  -2500.   200  468
RE DISCCART  -2500.   300  473
RE DISCCART  -2500.   400  475
RE DISCCART  -2500    500  478
RE DISCCART  -2500    750  485
RE DISCCART  -2500.  1000. 485
RE DISCCART  -2500   1500  485
RE DISCCART  -2500   2000  501
RE DISCCART  -2500   2500  501
RE DISCCART  -2000  -2500. 455
RE DISCCART  -2000. -2000. 458.
RE DISCCART  -2000  -1500. 457
RE DISCCART  -2000  -1000. 453
RE DISCCART  -2000   -750. 450
RE DISCCART  -2000.  -500. 448.
RE DISCCART  -2000.  -400. 448.
RE DISCCART  -2000.  -300. 448.
RE DISCCART  -2000.  -200. 448.
RE DISCCART  -2000.  -100  451
RE DISCCART  -2000.   100  466
RE DISCCART  -2000    200  464
RE DISCCART  -2000    300  465
RE DISCCART  -2000    400. 469
RE DISCCART  -2000.   500. 473.
RE DISCCART  -2000    750. 480
RE DISCCART  -2000   1000  478.
RE DISCCART  -2000   1500  492.
RE DISCCART  -2000.  2000  494
RE DISCCART  -2000   2500  505
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```
RE DISCCART  -1500   -2500  448
RE DISCCART  -1500   -2000. 452
RE DISCCART  -1500   -1500. 455
RE DISCCART  -1500. -1000. 460.
RE DISCCART  -1500    -750. 454.
RE DISCCART  -1500    -500  454.
RE DISCCART  -1500.   -400  454.
RE DISCCART  -1500    -300. 454
RE DISCCART  -1500.   -200  454
RE DISCCART  -1500    -100. 454
RE DISCCART  -1500     100  454
RE DISCCART  -1500.    200. 454.
RE DISCCART  -1500     300. 456.
RE DISCCART  -1500     400. 463
RE DISCCART  -1500     500. 467.
RE DISCCART  -1500.    750  477.
RE DISCCART  -1500.   1000  477
RE DISCCART  -1500    1500. 487
RE DISCCART  -1500    2000  487
RE DISCCART  -1500.   2500  497
RE DISCCART  -1000. -2500  448
RE DISCCART  -1000. -2000  448
RE DISCCART  -1000. -1500. 453
RE DISCCART  -1000. -1000  453
RE DISCCART  -1000.   -750  453
RE DISCCART  -1000.   -500  453
RE DISCCART  -1000.   -400  453
RE DISCCART  -1000.   -300  456
RE DISCCART  -1000.   -200. 455.
RE DISCCART  -1000.   -100  455
RE DISCCART  -1000     100  454
RE DISCCART  -1000     200. 454.
RE DISCCART  -1000     300. 454.
RE DISCCART  -1000.    400  454.
RE DISCCART  -1000     500. 455.
RE DISCCART  -1000     750. 467.
RE DISCCART  -1000    1000. 479.
RE DISCCART  -1000    1500. 482.
RE DISCCART  -1000    2000. 484.
RE DISCCART  -1000    2500. 497.
RE DISCCART   -750   -2500. 448.
RE DISCCART   -750   -2000. 448.
RE DISCCART   -750   -1500. 454.
RE DISCCART   -750. -1000  456
RE DISCCART   -750.   -750  455
RE DISCCART   -750    -500  456
RE DISCCART   -750    -400  457
RE DISCCART   -750    -300  460.
RE DISCCART   -750    -200. 458
RE DISCCART   -750    -100. 460
RE DISCCART   -750.    100. 454
RE DISCCART   -750.    200  454
RE DISCCART   -750     300  454
RE DISCCART   -750     400. 455
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RE DISCCART   -750     500. 457
RE DISCCART   -750     750. 458.
RE DISCCART   -750    1000. 474
RE DISCCART   -750    1500. 487
RE DISCCART   -750.   2000  487
RE DISCCART   -750    2500  499.
RE DISCCART   -500. -2500. 448
RE DISCCART   -500  -2000. 448
RE DISCCART   -500. -1500  457
RE DISCCART   -500. -1000  466
RE DISCCART   -500.  -750  457
RE DISCCART   -500   -500  457.
RE DISCCART   -500.  -400. 457
RE DISCCART   -500.  -300  457
RE DISCCART   -500   -200  456
RE DISCCART   -500   -100  455.
RE DISCCART   -500    100. 454
RE DISCCART   -500.   200. 454
RE DISCCART   -500    300. 454
RE DISCCART   -500    400  454.
RE DISCCART   -500    500. 455
RE DISCCART   -500.   750. 455
RE DISCCART   -500.  1000. 463
RE DISCCART   -500   1500. 484.
RE DISCCART   -500   2000. 485.
RE DISCCART   -500   2500. 501.
RE DISCCART   -400  -2500. 448.
RE DISCCART   -400. -2000. 450.
RE DISCCART   -400  -1500. 465.
RE DISCCART   -400  -1000. 457
RE DISCCART   -400   -750. 457.
RE DISCCART   -400   -500. 457
RE DISCCART   -400   -400. 457
RE DISCCART   -400   -300. 455
RE DISCCART   -400   -200. 455
RE DISCCART   -400   -100. 455.
RE DISCCART   -400.   100. 454.
RE DISCCART   -400.   200  454
RE DISCCART   -400.   300  454
RE DISCCART   -400    400  454
RE DISCCART   -400    500  454
RE DISCCART   -400.   750  457.
RE DISCCART   -400   1000  463
RE DISCCART   -400   1500  475
RE DISCCART   -400   2000. 485
RE DISCCART   -400   2500. 499.
RE DISCCART   -300  -2500. 448
RE DISCCART   -300  -2000. 457.
RE DISCCART   -300. -1500  467.
RE DISCCART   -300. -1000  458
RE DISCCART   -300   -750  458
RE DISCCART   -300   -500  462
RE DISCCART   -300   -400  459
RE DISCCART   -300.  -300  455.
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RE DISCCART   -300.  -200  454
RE DISCCART   -300   -100  454
RE DISCCART   -300    100  454
RE DISCCART   -300    200  454.
RE DISCCART   -300.   300. 454
RE DISCCART   -300.   400  454
RE DISCCART   -300.   500  454
RE DISCCART   -300.   750  462.
RE DISCCART   -300.  1000  466.
RE DISCCART   -300.  1500. 468.
RE DISCCART   -300.  2000. 487
RE DISCCART   -300.  2500  495
RE DISCCART   -200. -2500  448
RE DISCCART   -200. -2000  462.
RE DISCCART   -200. -1500. 467
RE DISCCART   -200  -1000  461
RE DISCCART   -200   -750  462.
RE DISCCART   -200   -500. 464.
RE DISCCART   -200   -400. 462
RE DISCCART   -200   -300  457
RE DISCCART   -200   -200  456
RE DISCCART   -200   -100  457
RE DISCCART   -200.   100. 457.
RE DISCCART   -200.   200. 457
RE DISCCART   -200.   300  457
RE DISCCART   -200.   400  456
RE DISCCART   -200.   500  454
RE DISCCART   -200.   750  460
RE DISCCART   -200.  1000. 465.
RE DISCCART   -200.  1500  470
RE DISCCART   -200.  2000  482
RE DISCCART   -200   2500  490
RE DISCCART   -100. -2500. 448.
RE DISCCART   -100. -2000. 458.
RE DISCCART   -100  -1500  469
RE DISCCART   -100  -1000  464
RE DISCCART   -100   -750  467
RE DISCCART   -100   -500. 463.
RE DISCCART   -100   -400  463
RE DISCCART   -100   -300  457
RE DISCCART   -100   -200  457
RE DISCCART   -100   -100. 457
RE DISCCART   -100    100. 457.
RE DISCCART   -100.   200. 458.
RE DISCCART   -100.   300  458
RE DISCCART   -100.   400  460
RE DISCCART   -100    500  454
RE DISCCART   -100    750  460
RE DISCCART   -100   1000  463
RE DISCCART   -100.  1500. 470.
RE DISCCART   -100.  2000. 482.
RE DISCCART   -100   2500. 483.
RE DISCCART    100. -2500. 448.
RE DISCCART    100. -2000. 458
```

```
RE DISCCART     100. -1500  468
RE DISCCART     100. -1000  476
RE DISCCART     100.  -750  482
RE DISCCART     100.  -500  474
RE DISCCART     100   -400  475.
RE DISCCART     100.  -300  475
RE DISCCART     100   -200. 466
RE DISCCART     100   -100. 466
RE DISCCART     100    100. 466.
RE DISCCART     100    200. 466.
RE DISCCART     100.   300  466
RE DISCCART     100.   400. 459.
RE DISCCART     100    500  457
RE DISCCART     100    750  456
RE DISCCART     100   1000  470
RE DISCCART     100   1500. 476.
RE DISCCART     100   2000  486
RE DISCCART     100   2500  478
RE DISCCART     200  -2500  448.
RE DISCCART     200. -2000. 458.
RE DISCCART     200. -1500. 468.
RE DISCCART     200  -1000  477
RE DISCCART     200   -750  480
RE DISCCART     200.  -500  478
RE DISCCART     200.  -400  477
RE DISCCART     200   -300  477
RE DISCCART     200.  -200  470
RE DISCCART     200   -100  470
RE DISCCART     200    100  470
RE DISCCART     200.   200. 470
RE DISCCART     200    300  468
RE DISCCART     200    400  462
RE DISCCART     200    500  457
RE DISCCART     200    750  455
RE DISCCART     200.  1000  465
RE DISCCART     200   1500  474
RE DISCCART     200   2000. 483
RE DISCCART     200   2500  476
RE DISCCART     300. -2500  452
RE DISCCART     300. -2000. 468
RE DISCCART     300. -1500  473.
RE DISCCART     300  -1000  482
RE DISCCART     300   -750  483
RE DISCCART     300   -500  477
RE DISCCART     300   -400  477
RE DISCCART     300   -300. 476.
RE DISCCART     300   -200. 474.
RE DISCCART     300.  -100  475.
RE DISCCART     300    100  473.
RE DISCCART     300    200  470
RE DISCCART     300    300  467
RE DISCCART     300    400  463
RE DISCCART     300    500. 457
RE DISCCART     300    750. 454.
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```
RE DISCCART    300    1000  462.
RE DISCCART    300    1500  476
RE DISCCART    300    2000. 477
RE DISCCART    300.   2500  474
RE DISCCART    400   -2500  457
RE DISCCART    400   -2000  469.
RE DISCCART    400.  -1500. 475
RE DISCCART    400.  -1000  486
RE DISCCART    400.   -750  486
RE DISCCART    400.   -500  477
RE DISCCART    400.   -400  476
RE DISCCART    400.   -300  473.
RE DISCCART    400.   -200. 469.
RE DISCCART    400.   -100  468
RE DISCCART    400     100  468
RE DISCCART    400     200  468.
RE DISCCART    400     300  465.
RE DISCCART    400     400  462
RE DISCCART    400     500  455
RE DISCCART    400     750  454.
RE DISCCART    400    1000. 454
RE DISCCART    400    1500. 468.
RE DISCCART    400.   2000. 473
RE DISCCART    400    2500  473
RE DISCCART    500   -2500  462
RE DISCCART    500   -2000  468
RE DISCCART    500   -1500  478
RE DISCCART    500   -1000  487
RE DISCCART    500    -750  486
RE DISCCART    500    -500  478
RE DISCCART    500    -400. 479.
RE DISCCART    500.   -300  481
RE DISCCART    500    -200  481
RE DISCCART    500    -100  477
RE DISCCART    500     100. 473
RE DISCCART    500     200  468.
RE DISCCART    500.    300  465
RE DISCCART    500.    400. 457
RE DISCCART    500.    500. 454.
RE DISCCART    500     750  454
RE DISCCART    500    1000  454
RE DISCCART    500.   1500. 471
RE DISCCART    500    2000. 472.
RE DISCCART    500    2500  472
RE DISCCART    750   -2500. 462
RE DISCCART    750   -2000  474.
RE DISCCART    750.  -1500  483.
RE DISCCART    750   -1000  493
RE DISCCART    750    -750  488
RE DISCCART    750    -500  494
RE DISCCART    750.   -400. 494
RE DISCCART    750    -300. 487.
RE DISCCART    750    -200. 487
RE DISCCART    750.   -100  484.
```

```
RE DISCCART    750     100. 482.
RE DISCCART    750.    200. 477.
RE DISCCART    750     300  474.
RE DISCCART    750     400  472.
RE DISCCART    750     500  465.
RE DISCCART    750     750. 458.
RE DISCCART    750.   1000  454.
RE DISCCART    750    1500  457.
RE DISCCART    750    2000  464.
RE DISCCART    750    2500. 473.
RE DISCCART   1000.  -2500  464.
RE DISCCART   1000   -2000  480.
RE DISCCART   1000   -1500  482.
RE DISCCART   1000   -1000. 501.
RE DISCCART   1000.   -750  490
RE DISCCART   1000    -500  493
RE DISCCART   1000    -400  493.
RE DISCCART   1000    -300  493.
RE DISCCART   1000    -200. 484.
RE DISCCART   1000.   -100. 483.
RE DISCCART   1000     100. 483
RE DISCCART   1000     200. 481
RE DISCCART   1000     300. 477
RE DISCCART   1000     400  476
RE DISCCART   1000     500. 472
RE DISCCART   1000.    750. 467.
RE DISCCART   1000    1000  463
RE DISCCART   1000    1500  456
RE DISCCART   1000    2000  466
RE DISCCART   1000.   2500  483
RE DISCCART   1500.  -2500  455
RE DISCCART   1500.  -2000. 473
RE DISCCART   1500   -1500  481
RE DISCCART   1500   -1000  487
RE DISCCART   1500    -750  492
RE DISCCART   1500.   -500. 487.
RE DISCCART   1500.   -400. 487
RE DISCCART   1500    -300  486
RE DISCCART   1500    -200. 485.
RE DISCCART   1500    -100  483
RE DISCCART   1500.    100  483
RE DISCCART   1500.    200  483
RE DISCCART   1500.    300. 483.
RE DISCCART   1500     400  483
RE DISCCART   1500     500  483
RE DISCCART   1500     750  483
RE DISCCART   1500    1000  476
RE DISCCART   1500    1500. 468.
RE DISCCART   1500    2000  464.
RE DISCCART   1500.   2500. 475.
RE DISCCART   2000.  -2500  454.
RE DISCCART   2000   -2000  468
RE DISCCART   2000   -1500  473
RE DISCCART   2000   -1000  485
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```
RE DISCCART   2000    -750  493
RE DISCCART   2000    -500  493
RE DISCCART   2000    -400  489.
RE DISCCART   2000.   -300. 486
RE DISCCART   2000    -200  484
RE DISCCART   2000    -100  486.
RE DISCCART   2000.    100. 486.
RE DISCCART   2000.    200. 487
RE DISCCART   2000.    300. 487
RE DISCCART   2000.    400  487
RE DISCCART   2000.    500  487
RE DISCCART   2000     750  492
RE DISCCART   2000.   1000  487
RE DISCCART   2000.   1500. 470.
RE DISCCART   2000.   2000  464
RE DISCCART   2000.   2500  465
RE DISCCART   2500.  -2500  454.
RE DISCCART   2500.  -2000. 473
RE DISCCART   2500.  -1500  468
RE DISCCART   2500   -1000  483
RE DISCCART   2500    -750  484
RE DISCCART   2500    -500. 484.
RE DISCCART   2500.   -400. 484
RE DISCCART   2500    -300  484
RE DISCCART   2500    -200  484
RE DISCCART   2500    -100  484
RE DISCCART   2500     100  489
RE DISCCART   2500     200. 494.
RE DISCCART   2500.    300  497
RE DISCCART   2500     400  497
RE DISCCART   2500     500  497
RE DISCCART   2500     750  497
RE DISCCART   2500.   1000  493
RE DISCCART   2500    1500  484
RE DISCCART   2500    2000  473
RE DISCCART   2500    2500  468
RE DISCCART  10000     10000  475
RE DISCCART  10000    -10000  475
RE DISCCART      0    -10000. 475.
RE DISCCART      0     10000  475
RE DISCCART  -10000.   10000  475
RE DISCCART  -10000   -10000  475
RE DISCCART   15000.   15000  475
RE DISCCART   15000   -15000  475.
RE DISCCART       0.  -15000. 475.
RE DISCCART       0.   15000. 475.
RE DISCCART   15000        0  475
RE DISCCART  -15000        0  475
RE DISCCART  -15000    15000  475
RE DISCCART  -15000.  -15000  475
RE DISCCART       0.  -17500  475
RE DISCCART    5000.  -17500  475
RE DISCCART   10000.  -17500. 475.
RE DISCCART   15000   -17500. 475
```

```
RE DISCCART   -5000. -17500  475.
RE DISCCART  -10000. -17500  475.
RE DISCCART  -15000. -17500  475
RE DISCCART   20000.  20000. 475
RE DISCCART   20000. -20000  475
RE DISCCART       0  -20000  475
RE DISCCART       0   20000. 475
RE DISCCART  -20000   20000  475
RE DISCCART  -20000  -20000  475
RE DISCCART    2500   -5000   475.
RE DISCCART    2500   -7500   475.
RE DISCCART    2500  -10000   475.
RE DISCCART    2500  -12500   475
RE DISCCART    2500  -15000.  475
RE DISCCART    2500  -17500   475
RE DISCCART    2500  -20000   475
RE DISCCART   -5000   -2500.  475.
RE DISCCART   10000.  -2500   475
RE DISCCART   15000   -2500   475
RE DISCCART   20000   -2500   475.
RE DISCCART  -15000   20000.  475
RE DISCCART  -10000.  20000.  475
RE DISCCART   -5000   20000   475
RE DISCCART    5000   20000.  475
RE DISCCART   10000   20000   475
RE DISCCART   15000   20000.  475.
RE DISCCART  -20000   15000.  475
RE DISCCART  -10000.  15000.  475
RE DISCCART   -5000   15000   475
RE DISCCART    5000   15000   475
RE DISCCART   10000   15000.  475.
RE DISCCART   20000   15000   475
RE DISCCART  -20000   10000   475
RE DISCCART  -15000   10000   475
RE DISCCART   -5000   10000   475
RE DISCCART    5000   10000.  475.
RE DISCCART   15000   10000   475
RE DISCCART   20000   10000   475
RE DISCCART  -20000    5000   475.
RE DISCCART  -15000.   5000   475.
RE DISCCART  -10000.   5000   475
RE DISCCART   -5000    5000.  475
RE DISCCART       0    5000   475
RE DISCCART    5000    5000   475
RE DISCCART   10000    5000   475
RE DISCCART   15000.   5000.  475
RE DISCCART   20000    5000.  475
RE DISCCART  -20000       0.  475
RE DISCCART  -10000       0.  475
RE DISCCART   -5000.      0   475
RE DISCCART    5000.      0   475.
RE DISCCART   10000       0   475
RE DISCCART   20000       0   475
RE DISCCART  -20000   -5000.  475.
```

```
RE DISCCART  -15000    -5000.  475
RE DISCCART  -10000.   -5000.  475
RE DISCCART   -5000.   -5000   475
RE DISCCART       0    -5000   475
RE DISCCART    5000    -5000   475.
RE DISCCART   10000.   -5000.  475
RE DISCCART   15000.   -5000   475
RE DISCCART   20000.   -5000   475
RE DISCCART  -20000   -10000   475
RE DISCCART  -15000   -10000   475.
RE DISCCART   -5000   -10000   475.
RE DISCCART    5000   -10000.  475.
RE DISCCART   15000   -10000.  475
RE DISCCART   20000   -10000   475
RE DISCCART  -20000   -15000   475
RE DISCCART  -10000.  -15000   475
RE DISCCART   -5000   -15000   475
RE DISCCART    5000   -15000   475.
RE DISCCART   10000   -15000.  475
RE DISCCART   20000   -15000   475
RE DISCCART  -15000.  -20000   475
RE DISCCART  -10000   -20000   475
RE DISCCART   -5000   -20000   475
RE DISCCART    5000   -20000.  475.
RE DISCCART   10000   -20000.  475.
RE DISCCART   15000   -20000.  475
RE FINISHED

**  The MEteorology pathway begins here
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used   The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model
   INPUTFIL  ISCST294 DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The EVent pathway begins here.
**EV  STARTING
**    EVENTPER HIGHNOX  24  PWRPLANT  94030624
**    EVENTLOC 300 0  -750 0  483 0
**EV  FINISHED
**  The OUtput pathway begins here.
OU STARTING

**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST
```

```
**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the Cdn  Ambient Air Qual. Objective for
**  nitrogen dioxide 24-hour is 200 ug/Nm^3 (acceptable)
   MAXIFILE 24 STATION 200.0 MX24NOX FIL 22
   MAXIFILE 24 OPENPIT 200.0 MX24NOX FIL 22
**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
   PLOTFILE  1  STATION 1ST K2001NO1.FST 24
   PLOTFILE  1 OPENPIT 1ST K2001NO1 FST 24
   PLOTFILE  24  STATION 1ST K2001NO2 FST 25
   PLOTFILE  24  OPENPIT 1ST K2001NO2 FST 25
   PLOTFILE  PERIOD STATION  K2001NO3.FST 26
   PLOTFILE  PERIOD OPENPIT  K2001NO3 FST 26
OU FINISHED
```

```
**Project No  4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is TSP
**
** All met data is from the Koala Camp Weather Station
** To run the model type:
**
**    ISCST2 K2007TSP INP K2007TSP.OUT
**
** The results for this problem are provided in file K2007TSP OUT
**
**NOTE: THE DIESEL POWER PLANT STACK HEIGHT HAS BEEN INCREASED FROM
** 16.9 M TO 22 9 M FOR THIS MODEL ITERATION    THE FUEL FOR THE DIESEL
**  POWER STATION CONTAINS 0 05 WT % SULPHUR   THE TSP EMISSION RATE HAS
**  BEEN INCREASED BY 40% TO ACCOUNT FOR AIR QUALITY PERMIT APPLICATION
**  PURPOSES  THE EVENT PROCESSOR WILL NOT BE USED FOR THIS ITERATION
**  THIS MODEL ITERATION IS FOR FY2007 (Year 11)
**
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds Mineral Processing Plant
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  24  PERIOD
   POLLUTID  TSP
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
   ERRORFIL  ERRORTSP OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
**  The diesel power plant will operate at 70% of full load for 24 h/day
**  The emission rates have already been adjusted, so use a emission
**  factor of 1 0.  Eight gensets will operate.
SO LOCATION  CAT3616A  POINT    43 0    45.0    466.0
SO EMISFACT  CAT3616A  HROFDY  24*1.0
SO LOCATION  CAT3616B  POINT    43 0    51 0    466.0
SO EMISFACT  CAT3616B  HROFDY  24*1 0
SO LOCATION  CAT3616C  POINT    43 0    57 0    466 0
SO EMISFACT  CAT3616C  HROFDY  24*1 0
SO LOCATION  CAT3616D  POINT    43.0    63 0    466 0
SO EMISFACT  CAT3616D  HROFDY  24*1 0
SO LOCATION  CAT3616E  POINT    43.0    69 0    466 0
SO EMISFACT  CAT3616E  HROFDY  24*1 0
SO LOCATION  CAT3616F  POINT    43 0    75 0    466 0
SO EMISFACT  CAT3616F  HROFDY  24*1 0
SO LOCATION  CAT3616G  POINT    43 0    81 0    466 0
SO EMISFACT  CAT3616G  HROFDY  24*1.0
SO LOCATION  CAT3616H  POINT    43 0    87 0    466 0
SO EMISFACT  CAT3616H  HROFDY  24*1 0

**  The diesel fired heating boilers both operate Dec.-Mar , one boiler operates
**  Sept , Oct., Nov  and Apr., no boiler operation May to August;
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**  adjust emission factors accordingly  Each boiler runs at avg  75% of full
**  load
SO LOCATION  GLYBOILA  POINT    12 0  -188.0    466.0
SO EMISFACT  GLYBOILA  MONTH   3*0 75  8*0.0  1*0.75
SO LOCATION  GLYBOILB  POINT    17 0  -188 0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0.75  4*0 0   4*0 75
SO LOCATION  PRIMCRUS  POINT  -150.0   490 0    475 0
**  The primary crusher will operate for 10 hours/day so adjust the
**  emission factor accordingly
SO EMISFACT  PRIMCRUS HROFDY   7*0.0  10*1 0  7*0.0
SO LOCATION  RECLAIM   POINT  -203 0   196.0    475 0
SO LOCATION  PROPLANT  POINT   -96.0   106 0    466.0
SO LOCATION  RECPLANT  POINT  -104 0    52 0    466.0
**  The Recovery Plant Area Wet Gas Scrubber operates 12 hr/d, adjust the
**    emission factor accordingly
SO EMISFACT  RECPLANT  HROFDY  7*0 0  12*1 0  5*0.0
**  The diesel generators will use 0 05% wt  sulfur fuel, the heating boilers
**  will use No. 2 distillate fuel @ 0 2% wt. sulfur
** Point Sources        QS     HS    TS    VS   DS
** Parameters:         ----   ----  ----  ----  ---
SO SRCPARAM  CAT3616A  0 185  22.9  712.  20.2  0 9
SO SRCPARAM  CAT3616B  0 185  22.9  712.  20 2  0.9
SO SRCPARAM  CAT3616C  0 185  22 9  712   20 2  0 9
SO SRCPARAM  CAT3616D  0.185  22.9  712   20 2  0 9
SO SRCPARAM  CAT3616E  0.185  22 9  712   20 2  0 9
SO SRCPARAM  CAT3616F  0.185  22 9  712.  20.2  0 9
SO SRCPARAM  CAT3616G  0.185  22 9  712.  20 2  0.9
SO SRCPARAM  CAT3616H  0 185  22 9  712.  20 2  0 9
SO SRCPARAM  GLYBOILA  0.029  11 5  433    7 0  0 6
SO SRCPARAM  GLYBOILB  0.029  11 5  433.   7 0  0 6
SO SRCPARAM  PRIMCRUS  0.425   8 8  278.  22.1  0 7
SO SRCPARAM  RECLAIM   0.386  11.9  278.  20 1  0.7
SO SRCPARAM  PROPLANT  1.39   32.0  278   18 0  1 4
SO SRCPARAM  RECPLANT  0.24   35 0  278    9 3  0.8
**  Fugitive dust sources include the Koala, Fox and Leslie open pits,
**  haul roads from Koala/Fox/Leslie to the ROM stockpile, and
**  the waste dumps.

**  Firstly, the Koala pit.
SO LOCATION KOALAP AREA 400. 200  460
SO SRCPARAM KOALAP 0 000000109 1 0 525

**  Secondly, the Fox pit
SO LOCATION FOXP AREA -4000. -6300. 442
SO SRCPARAM FOXP 0 00000162 1 0 575.

**  Thirdly, the Leslie pit.
SO LOCATION LESLIEP AREA -2300. -3800  442
SO SRCPARAM LESLIEP 0 000000832 1 0 800

**  Fourth, the Panda and Koala waste dumps.
SO LOCATION PKDUMP AREA -1500  800  495
SO SRCPARAM PKDUMP 0.0000257 1 0 2000.0
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**   Fifth, the Run of Mine (ROM) Stockpile near the primary crusher
**   A area source of TSP emissions (300 m on a side)
SO LOCATION ROMSTOCK AREA -300. 500  450
SO SRCPARAM ROMSTOCK 0.0000257 1 0 300

**   Building heights and widths are input for calculation of building
**   downwash   Building widths are input beginning with the 10 degree
**   flow vector and incrementing by 10 degrees clockwise.
   BUILDHGT  CAT3616A  36*13 9
   BUILDWID  CAT3616A   0 0    0 0    0.0    0.0    0.0    0.0    0 0    0 0
             CAT3616A   0 0    0 0    0 0    0.0    0 0    0.0    0 0    0.0
             CAT3616A   0 0    3 00   3.05   3 19   3.46   3 92   4 67   6 00
             CAT3616A   8 77 17.28 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616A  60.00 54.27 51 79 51 00
   BUILDHGT  CAT3616B  36*13 9
   BUILDWID  CAT3616B   0 0    0 0    0 0    0.0    0.0    0 0    0.0    0.0
             CAT3616B   0 0    0.0    0 0    0.0    0.0    0.0    0 0    0 0
             CAT3616B   0 0    9.00   9 14   9 58 10.39 11 75 14 00 18 00
             CAT3616B  26 31 30 46 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616B  51 96 47 89 45.69 45.00
   BUILDHGT  CAT3616C  36*13 9
   BUILDWID  CAT3616C   0 0    0.0    0 0    0 0    0.0    0 0    0 0    0 0
             CAT3616C   0.0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616C   0.0  15 00 15 23 15 96 17 32 19 58 23 33 30 00
             CAT3616C  31 93 30 46 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616C  45.03 41 50 39.60 39 00
   BUILDHGT  CAT3616D  36*13.9
   BUILDWID  CAT3616D   0.0    0 0    0.0    0 0    0 0    0 0    0 0    0.0
             CAT3616D   0.0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616D   0 0   21 00 21 32 22 35 24 25 27 41 32 67 34 64
             CAT3616D  31 93 30 46 30.00 30 46 31.93 34 64 39.16 43 08
             CAT3616D  38.11 35 12 33 51 33 00
   BUILDHGT  CAT3616E  36*13 9
   BUILDWID  CAT3616E   0.0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616E   0.0    0 0    0 0    0.0    0 0    0 0    0 0    0 0
             CAT3616E   0.0   27 00 27 50 28.80 31 00 35 20 39 50 35 20
             CAT3616E  32.40 31 00 30.50 31 00 32.70 35 70 40.00 35 40
             CAT3616E  31.40 29.00 28 20 27 00
   BUILDHGT  CAT3616F  36*13.9
   BUILDWID  CAT3616F   0.0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616F   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616F   0 0   33 00 33.50 35.20 38 30 42 80 39 50 35 00
             CAT3616F  32.20 30 80 30 60 31 00 32.50 35.30 33 30 28 10
             CAT3616F  24 80 22 90 21 90 21 00
   BUILDHGT  CAT3616G  36*13 9
   BUILDWID  CAT3616G   0 0    0.0    0 0    0.0    0.0    0 0    0 0    0 0
             CAT3616G   0 0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616G   0 0   39.00 39.40 41.40 45 00 47 00 39 50 35 00
             CAT3616G  32 30 31 00 30.50 31.00 32 40 31 00 23 80 20.20
             CAT3616G  18 00 16 60 15.80 15.00
   BUILDHGT  CAT3616H  36*13 9
   BUILDWID  CAT3616H   0.0    0.0    0.0    0.0    0 0    0 0    0 0    0 0
             CAT3616H   0.0    0.0    0.0    0 0    0 0    0 0    0 0    0 0
             CAT3616H   0.0   45.00 45 40 47 50 51 50 47 00 39 50 35 00
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           CAT3616H  32.40 31 00 30.40 31 00 28 50 19 50 15 20 12 70
           CAT3616H  11.40 10 50 10.00  9 00
  BUILDHGT GLYBOILA  36*8.5
  BUILDWID GLYBOILA  2.03  2.13  2 31  2.61  3.11 4.00  5 85  11 52
           GLYBOILA 21.00 21 32 22 35 14 00 10.89  9 14  8 08  7 45
           GLYBOILA  7 11  7.00  7 11  7 45  8 08  9 14 10 89 14.00
           GLYBOILA 22.35 28 43 28.00 21 00 11 52  5 85  4.00  3 11
           GLYBOILA  2.61  2 31  2.13  2 00
  BUILDHGT GLYBOILB  36*8 5
  BUILDWID GLYBOILB  2 03  2.13  2.31  2.61  3.11  4 00  5 85 11.52
           GLYBOILB 16 00 16.25 17.03 14.00 10.89  9.14  8 08  7 45
           GLYBOILB  7 11  7 00  7 11  7.45  8 08  9.14 10 89 14 00
           GLYBOILB 22 35 33 51 33 00 21 00 11 52  5 85  4 00  3.11
           GLYBOILB  2 61  2 31  2 13  2.00
  BUILDHGT PROPLANT  36*28 5
  BUILDWID PROPLANT   2.03   2.13   2 31   2.61   3.11   4 00   5 85  11 52
           PROPLANT  26 00  26 40  27.67  30 02  33 94  33 94  30 02  27.67
           PROPLANT  26 40  26.00  69 05  72 36  78 52  88.77 105.79 136 00
           PROPLANT 138 34 132.01 130.00  11 52   5 85   4.00   3.11   2 61
           PROPLANT   2.31   2 13   2.03   2.00
  BUILDHGT RECPLANT  36*28 5
  BUILDWID RECPLANT  62 96  65 98  71 59  31 11  26 11  23 09  21 28  20 31
           RECPLANT  20 00  20 31  23 39  16 00  12 45  10 44   9 23   8.51
           RECPLANT   8 12   8.00   8 12   8 51   9 23  10 44  12 45  16.00
           RECPLANT  23 39  46.07 108 00 109 67 114 93 124 71  80 94  71.59
           RECPLANT  71.59  65 98  62 96  62 00
**  The Sources are divided into two different groups below:
SO SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D CAT3616E CAT3616F
SO SRCGROUP  STATION CAT3616G CAT3616H
SO SRCGROUP  STATION  GLYBOILA GLYBOILB PRIMCRUS RECLAIM PROPLANT RECPLANT
SO SRCGROUP  OPENPIT  KOALAP FOXP LESLIEP PKDUMP  ROMSTOCK
**  PLINE1-PLINE56 KLINE1-KLINE24
**  SO SRCGROUP  FUGITIVE PKDUMP ROMSTOCK ROMLIN1-ROMLIN4 MLINE1-MLINE68
SO FINISHED
** Details for the REceptor grid are provided below
RE STARTING
** A total of 498 discrete receptors will be used.
RE DISCCART  -2500. -2500  457
RE DISCCART  -2500. -2000. 456.
RE DISCCART  -2500. -1500  456
RE DISCCART  -2500. -1000  453
RE DISCCART  -2500.  -750  453
RE DISCCART  -2500.  -500  459
RE DISCCART  -2500.  -400. 468
RE DISCCART  -2500   -300  468
RE DISCCART  -2500   -200  467
RE DISCCART  -2500   -100  466
RE DISCCART  -2500    100  467
RE DISCCART  -2500    200  468.
RE DISCCART  -2500    300. 473
RE DISCCART  -2500.   400. 475.
RE DISCCART  -2500.   500. 478.
RE DISCCART  -2500.   750  485
RE DISCCART  -2500.  1000  485.
```

```
RE DISCCART  -2500.  1500  485
RE DISCCART  -2500   2000. 501.
RE DISCCART  -2500   2500. 501.
RE DISCCART  -2000  -2500. 455
RE DISCCART  -2000. -2000  458
RE DISCCART  -2000  -1500. 457.
RE DISCCART  -2000  -1000  453.
RE DISCCART  -2000   -750  450.
RE DISCCART  -2000   -500  448.
RE DISCCART  -2000   -400. 448
RE DISCCART  -2000   -300. 448
RE DISCCART  -2000.  -200  448
RE DISCCART  -2000.  -100  451
RE DISCCART  -2000.   100  466
RE DISCCART  -2000.   200. 464
RE DISCCART  -2000.   300  465
RE DISCCART  -2000.   400  469
RE DISCCART  -2000.   500  473.
RE DISCCART  -2000.   750  480
RE DISCCART  -2000.  1000  478
RE DISCCART  -2000.  1500  492
RE DISCCART  -2000.  2000  494
RE DISCCART  -2000.  2500  505
RE DISCCART  -1500  -2500  448
RE DISCCART  -1500  -2000  452.
RE DISCCART  -1500  -1500. 455.
RE DISCCART  -1500. -1000  460
RE DISCCART  -1500.  -750  454
RE DISCCART  -1500   -500  454.
RE DISCCART  -1500.  -400. 454
RE DISCCART  -1500.  -300  454
RE DISCCART  -1500.  -200  454
RE DISCCART  -1500   -100. 454.
RE DISCCART  -1500    100. 454.
RE DISCCART  -1500    200. 454.
RE DISCCART  -1500    300. 456.
RE DISCCART  -1500    400. 463.
RE DISCCART  -1500.   500  467
RE DISCCART  -1500.   750  477
RE DISCCART  -1500.  1000  477
RE DISCCART  -1500.  1500  487.
RE DISCCART  -1500   2000. 487.
RE DISCCART  -1500.  2500  497
RE DISCCART  -1000  -2500  448
RE DISCCART  -1000  -2000  448
RE DISCCART  -1000  -1500  453
RE DISCCART  -1000  -1000  453
RE DISCCART  -1000   -750  453
RE DISCCART  -1000   -500. 453.
RE DISCCART  -1000.  -400. 453.
RE DISCCART  -1000.  -300. 456.
RE DISCCART  -1000.  -200  455
RE DISCCART  -1000   -100  455
RE DISCCART  -1000    100  454
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RE DISCCART  -1000     200. 454.
RE DISCCART  -1000     300. 454.
RE DISCCART  -1000     400  454.
RE DISCCART  -1000.    500  455
RE DISCCART  -1000     750  467
RE DISCCART  -1000    1000  479.
RE DISCCART  -1000.   1500  482
RE DISCCART  -1000.   2000  484
RE DISCCART  -1000.   2500  497
RE DISCCART   -750. -2500  448
RE DISCCART   -750. -2000  448
RE DISCCART   -750. -1500  454.
RE DISCCART   -750. -1000. 456.
RE DISCCART   -750.  -750  455
RE DISCCART   -750.  -500  456
RE DISCCART   -750   -400  457
RE DISCCART   -750   -300. 460.
RE DISCCART   -750   -200. 458
RE DISCCART   -750   -100. 460
RE DISCCART   -750    100. 454
RE DISCCART   -750    200. 454.
RE DISCCART   -750    300. 454.
RE DISCCART   -750    400  455.
RE DISCCART   -750    500. 457.
RE DISCCART   -750    750  458.
RE DISCCART   -750   1000  474.
RE DISCCART   -750   1500  487
RE DISCCART   -750   2000  487.
RE DISCCART   -750   2500  499
RE DISCCART   -500. -2500  448
RE DISCCART   -500  -2000  448
RE DISCCART   -500  -1500  457
RE DISCCART   -500  -1000  466
RE DISCCART   -500   -750. 457.
RE DISCCART   -500.  -500. 457
RE DISCCART   -500.  -400  457
RE DISCCART   -500   -300  457.
RE DISCCART   -500   -200  456
RE DISCCART   -500   -100. 455
RE DISCCART   -500    100. 454.
RE DISCCART   -500.   200. 454.
RE DISCCART   -500.   300. 454.
RE DISCCART   -500.   400  454.
RE DISCCART   -500.   500  455
RE DISCCART   -500.   750  455
RE DISCCART   -500   1000  463
RE DISCCART   -500   1500  484
RE DISCCART   -500   2000. 485.
RE DISCCART   -500   2500  501.
RE DISCCART   -400. -2500. 448.
RE DISCCART   -400  -2000  450
RE DISCCART   -400  -1500  465
RE DISCCART   -400  -1000  457
RE DISCCART   -400   -750  457
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RE DISCCART   -400    -500  457.
RE DISCCART   -400    -400  457.
RE DISCCART   -400    -300. 455
RE DISCCART   -400.   -200  455
RE DISCCART   -400.   -100  455.
RE DISCCART   -400     100  454
RE DISCCART   -400.    200. 454
RE DISCCART   -400.    300  454
RE DISCCART   -400.    400  454
RE DISCCART   -400.    500. 454
RE DISCCART   -400     750  457.
RE DISCCART   -400    1000. 463.
RE DISCCART   -400    1500. 475.
RE DISCCART   -400    2000  485
RE DISCCART   -400.   2500  499.
RE DISCCART   -300   -2500  448.
RE DISCCART   -300   -2000. 457
RE DISCCART   -300.  -1500  467
RE DISCCART   -300   -1000  458
RE DISCCART   -300    -750  458
RE DISCCART   -300    -500  462.
RE DISCCART   -300    -400  459
RE DISCCART   -300.   -300. 455
RE DISCCART   -300    -200  454
RE DISCCART   -300.   -100  454
RE DISCCART   -300.    100  454
RE DISCCART   -300.    200  454
RE DISCCART   -300.    300  454
RE DISCCART   -300.    400. 454
RE DISCCART   -300.    500  454
RE DISCCART   -300.    750  462
RE DISCCART   -300    1000  466
RE DISCCART   -300.   1500. 468
RE DISCCART   -300.   2000  487
RE DISCCART   -300.   2500  495
RE DISCCART   -200.  -2500  448.
RE DISCCART   -200   -2000. 462.
RE DISCCART   -200   -1500. 467
RE DISCCART   -200   -1000. 461
RE DISCCART   -200.   -750  462
RE DISCCART   -200    -500  464
RE DISCCART   -200    -400  462
RE DISCCART   -200.   -300. 457
RE DISCCART   -200.   -200  456
RE DISCCART   -200    -100  457
RE DISCCART   -200     100  457
RE DISCCART   -200     200  457
RE DISCCART   -200     300  457
RE DISCCART   -200     400. 456
RE DISCCART   -200     500. 454.
RE DISCCART   -200     750. 460.
RE DISCCART   -200.   1000. 465.
RE DISCCART   -200.   1500  470.
RE DISCCART   -200.   2000  482.
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RE DISCCART   -200   2500  490
RE DISCCART   -100. -2500  448
RE DISCCART   -100. -2000  458
RE DISCCART   -100. -1500  469.
RE DISCCART   -100. -1000. 464.
RE DISCCART   -100   -750  467
RE DISCCART   -100   -500  463
RE DISCCART   -100   -400  463.
RE DISCCART   -100   -300. 457.
RE DISCCART   -100   -200. 457.
RE DISCCART   -100   -100. 457.
RE DISCCART   -100    100  457
RE DISCCART   -100    200  458
RE DISCCART   -100    300  458.
RE DISCCART   -100.   400  460
RE DISCCART   -100    500  454
RE DISCCART   -100    750  460
RE DISCCART   -100   1000  463.
RE DISCCART   -100.  1500  470
RE DISCCART   -100.  2000  482
RE DISCCART   -100   2500  483
RE DISCCART    100. -2500  448
RE DISCCART    100  -2000  458
RE DISCCART    100  -1500  468
RE DISCCART    100  -1000  476
RE DISCCART    100.  -750  482
RE DISCCART    100.  -500  474
RE DISCCART    100   -400  475
RE DISCCART    100   -300  475
RE DISCCART    100   -200. 466.
RE DISCCART    100.  -100  466
RE DISCCART    100    100  466
RE DISCCART    100    200  466
RE DISCCART    100    300  466
RE DISCCART    100    400  459
RE DISCCART    100    500  457
RE DISCCART    100    750  456
RE DISCCART    100   1000  470
RE DISCCART    100   1500  476
RE DISCCART    100   2000. 486.
RE DISCCART    100.  2500  478
RE DISCCART    200  -2500  448
RE DISCCART    200  -2000  458
RE DISCCART    200  -1500  468
RE DISCCART    200  -1000  477
RE DISCCART    200   -750. 480
RE DISCCART    200.  -500. 478.
RE DISCCART    200   -400. 477.
RE DISCCART    200.  -300  477
RE DISCCART    200.  -200  470
RE DISCCART    200.  -100  470
RE DISCCART    200    100  470
RE DISCCART    200    200  470
RE DISCCART    200    300  468
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RE DISCCART    200.   400  462
RE DISCCART    200.   500  457
RE DISCCART    200    750  455
RE DISCCART    200.  1000. 465
RE DISCCART    200.  1500  474
RE DISCCART    200   2000  483
RE DISCCART    200   2500. 476.
RE DISCCART    300  -2500  452.
RE DISCCART    300  -2000. 468.
RE DISCCART    300  -1500. 473
RE DISCCART    300  -1000. 482.
RE DISCCART    300   -750  483.
RE DISCCART    300   -500  477
RE DISCCART    300   -400  477
RE DISCCART    300   -300  476
RE DISCCART    300.  -200  474
RE DISCCART    300   -100  475
RE DISCCART    300    100  473
RE DISCCART    300    200. 470
RE DISCCART    300.   300  467
RE DISCCART    300    400  463
RE DISCCART    300    500  457
RE DISCCART    300.   750  454.
RE DISCCART    300.  1000  462.
RE DISCCART    300   1500  476.
RE DISCCART    300   2000. 477
RE DISCCART    300   2500. 474
RE DISCCART    400  -2500  457
RE DISCCART    400  -2000. 469.
RE DISCCART    400  -1500  475.
RE DISCCART    400. -1000  486
RE DISCCART    400   -750  486
RE DISCCART    400   -500  477
RE DISCCART    400   -400. 476.
RE DISCCART    400   -300. 473
RE DISCCART    400   -200. 469
RE DISCCART    400   -100  468
RE DISCCART    400.   100  468
RE DISCCART    400    200  468
RE DISCCART    400    300  465.
RE DISCCART    400    400. 462
RE DISCCART    400    500  455
RE DISCCART    400    750  454
RE DISCCART    400   1000  454
RE DISCCART    400   1500  468
RE DISCCART    400   2000  473.
RE DISCCART    400   2500. 473.
RE DISCCART    500  -2500  462
RE DISCCART    500  -2000  468
RE DISCCART    500  -1500  478
RE DISCCART    500. -1000  487
RE DISCCART    500   -750  486
RE DISCCART    500   -500. 478
RE DISCCART    500   -400  479
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RE DISCCART     500.   -300  481.
RE DISCCART     500.   -200  481.
RE DISCCART     500    -100  477
RE DISCCART     500     100  473.
RE DISCCART     500     200. 468
RE DISCCART     500     300  465
RE DISCCART     500.    400  457
RE DISCCART     500.    500  454.
RE DISCCART     500     750  454.
RE DISCCART     500    1000. 454
RE DISCCART     500.   1500. 471
RE DISCCART     500.   2000  472
RE DISCCART     500    2500  472
RE DISCCART     750   -2500  462
RE DISCCART     750   -2000  474.
RE DISCCART     750   -1500. 483
RE DISCCART     750   -1000  493.
RE DISCCART     750    -750  488
RE DISCCART     750    -500. 494
RE DISCCART     750    -400. 494
RE DISCCART     750    -300  487
RE DISCCART     750.   -200  487
RE DISCCART     750.   -100  484.
RE DISCCART     750     100. 482
RE DISCCART     750.    200. 477
RE DISCCART     750     300. 474
RE DISCCART     750.    400  472
RE DISCCART     750.    500  465
RE DISCCART     750     750  458.
RE DISCCART     750    1000. 454
RE DISCCART     750    1500. 457
RE DISCCART     750    2000  464
RE DISCCART     750    2500  473
RE DISCCART    1000   -2500. 464.
RE DISCCART    1000   -2000  480
RE DISCCART    1000   -1500  482
RE DISCCART    1000.  -1000  501
RE DISCCART    1000    -750  490
RE DISCCART    1000    -500  493
RE DISCCART    1000    -400. 493
RE DISCCART    1000.   -300  493
RE DISCCART    1000    -200  484
RE DISCCART    1000    -100  483
RE DISCCART    1000     100  483
RE DISCCART    1000     200  481.
RE DISCCART    1000     300. 477
RE DISCCART    1000.    400  476
RE DISCCART    1000     500. 472
RE DISCCART    1000.    750. 467
RE DISCCART    1000    1000  463
RE DISCCART    1000    1500  456.
RE DISCCART    1000    2000  466.
RE DISCCART    1000    2500  483.
RE DISCCART    1500   -2500. 455.
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RE DISCCART   1500  -2000. 473.
RE DISCCART   1500  -1500  481
RE DISCCART   1500  -1000  487
RE DISCCART   1500.  -750  492.
RE DISCCART   1500   -500. 487.
RE DISCCART   1500.  -400. 487
RE DISCCART   1500.  -300  486
RE DISCCART   1500.  -200  485
RE DISCCART   1500.  -100. 483
RE DISCCART   1500.   100  483
RE DISCCART   1500    200  483.
RE DISCCART   1500    300  483
RE DISCCART   1500    400  483
RE DISCCART   1500    500  483
RE DISCCART   1500    750  483.
RE DISCCART   1500.  1000  476
RE DISCCART   1500.  1500  468
RE DISCCART   1500.  2000  464
RE DISCCART   1500.  2500  475
RE DISCCART   2000  -2500  454.
RE DISCCART   2000  -2000. 468
RE DISCCART   2000  -1500. 473
RE DISCCART   2000  -1000. 485.
RE DISCCART   2000.  -750  493
RE DISCCART   2000.  -500  493
RE DISCCART   2000   -400  489
RE DISCCART   2000   -300  486.
RE DISCCART   2000   -200. 484
RE DISCCART   2000   -100  486
RE DISCCART   2000    100  486
RE DISCCART   2000    200  487.
RE DISCCART   2000.   300  487
RE DISCCART   2000.   400  487
RE DISCCART   2000    500  487
RE DISCCART   2000.   750  492
RE DISCCART   2000.  1000  487
RE DISCCART   2000.  1500  470.
RE DISCCART   2000.  2000. 464
RE DISCCART   2000.  2500  465
RE DISCCART   2500  -2500  454
RE DISCCART   2500. -2000  473
RE DISCCART   2500  -1500  468
RE DISCCART   2500  -1000. 483.
RE DISCCART   2500   -750  484
RE DISCCART   2500   -500. 484
RE DISCCART   2500.  -400  484
RE DISCCART   2500.  -300  484
RE DISCCART   2500.  -200  484
RE DISCCART   2500   -100  484
RE DISCCART   2500    100  489
RE DISCCART   2500    200  494
RE DISCCART   2500    300  497
RE DISCCART   2500    400  497.
RE DISCCART   2500    500  497.
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RE DISCCART   2500     750. 497.
RE DISCCART   2500    1000. 493.
RE DISCCART   2500    1500  484.
RE DISCCART   2500    2000  473
RE DISCCART   2500    2500  468.
RE DISCCART  10000     10000. 475
RE DISCCART  10000.   -10000  475
RE DISCCART      0    -10000  475
RE DISCCART      0     10000  475
RE DISCCART  -10000.  10000   475.
RE DISCCART  -10000   -10000  475.
RE DISCCART   15000   15000   475
RE DISCCART   15000. -15000   475
RE DISCCART       0  -15000   475
RE DISCCART       0   15000   475.
RE DISCCART   15000       0   475.
RE DISCCART  -15000.      0.  475
RE DISCCART  -15000   15000   475
RE DISCCART  -15000  -15000   475
RE DISCCART       0  -17500   475
RE DISCCART    5000  -17500.  475.
RE DISCCART   10000  -17500.  475.
RE DISCCART   15000  -17500.  475
RE DISCCART   -5000  -17500.  475
RE DISCCART  -10000. -17500   475
RE DISCCART  -15000  -17500   475
RE DISCCART   20000   20000.  475
RE DISCCART   20000  -20000.  475.
RE DISCCART       0. -20000.  475
RE DISCCART       0   20000   475
RE DISCCART  -20000   20000   475
RE DISCCART  -20000  -20000   475
RE DISCCART    2500.  -5000    475.
RE DISCCART    2500   -7500.   475.
RE DISCCART    2500. -10000.   475.
RE DISCCART    2500. -12500    475.
RE DISCCART    2500. -15000    475.
RE DISCCART    2500. -17500    475.
RE DISCCART    2500. -20000.   475
RE DISCCART   -5000.  -2500    475
RE DISCCART   10000   -2500    475.
RE DISCCART   15000   -2500    475.
RE DISCCART   20000.  -2500    475.
RE DISCCART  -15000   20000    475.
RE DISCCART  -10000.  20000    475.
RE DISCCART   -5000.  20000    475.
RE DISCCART    5000.  20000.   475.
RE DISCCART   10000.  20000    475.
RE DISCCART   15000   20000    475.
RE DISCCART  -20000   15000    475.
RE DISCCART  -10000   15000    475.
RE DISCCART   -5000   15000    475.
RE DISCCART    5000   15000.   475
RE DISCCART   10000.  15000.   475.
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RE DISCCART   20000   15000   475.
RE DISCCART  -20000   10000   475
RE DISCCART  -15000   10000   475
RE DISCCART   -5000   10000.  475
RE DISCCART    5000.  10000.  475
RE DISCCART   15000   10000   475.
RE DISCCART   20000.  10000   475
RE DISCCART  -20000.   5000   475
RE DISCCART  -15000.   5000.  475
RE DISCCART  -10000    5000   475
RE DISCCART   -5000    5000   475
RE DISCCART       0    5000   475
RE DISCCART    5000    5000   475.
RE DISCCART   10000    5000   475.
RE DISCCART   15000.   5000   475
RE DISCCART   20000    5000   475.
RE DISCCART  -20000       0.  475
RE DISCCART  -10000       0.  475
RE DISCCART   -5000       0   475
RE DISCCART    5000       0.  475.
RE DISCCART   10000       0.  475.
RE DISCCART   20000       0.  475
RE DISCCART  -20000   -5000.  475
RE DISCCART  -15000   -5000.  475
RE DISCCART  -10000   -5000.  475
RE DISCCART   -5000   -5000.  475
RE DISCCART      0.   -5000.  475
RE DISCCART    5000   -5000   475.
RE DISCCART   10000   -5000.  475
RE DISCCART   15000.  -5000   475
RE DISCCART   20000   -5000   475
RE DISCCART  -20000  -10000   475.
RE DISCCART  -15000  -10000   475
RE DISCCART   -5000  -10000   475
RE DISCCART    5000  -10000.  475
RE DISCCART   15000. -10000.  475
RE DISCCART   20000. -10000.  475
RE DISCCART  -20000  -15000   475
RE DISCCART  -10000  -15000   475
RE DISCCART   -5000  -15000   475.
RE DISCCART    5000  -15000   475
RE DISCCART   10000  -15000   475
RE DISCCART   20000  -15000   475
RE DISCCART  -15000  -20000.  475.
RE DISCCART  -10000  -20000.  475
RE DISCCART   -5000  -20000.  475.
RE DISCCART    5000. -20000.  475
RE DISCCART   10000  -20000.  475
RE DISCCART   15000  -20000   475
RE FINISHED

**  The MEteorology pathway begins here
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
```

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**  were used.  The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model
   INPUTFIL  ISCST294 DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The OUtput pathway begins here.
OU STARTING
**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the acceptable Cdn  Ambient Air Qual  Objective
**   MAXIFILE  24  STATION  120.0   MAXITSP FIL 21
**   MAXIFILE  24  OPENPIT 120 0 MAXITSP FIL 21
**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
** PLOTFILE  24  STATION  K007dTSP FST 22
** PLOTFILE  24  OPENPIT  K007dTSP FST 22
   PLOTFILE  PERIOD STATION  K2007TSP FST 23
   PLOTFILE  PERIOD OPENPIT  K2007TSP FST 23
OU FINISHED
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APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No. 4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is NOx-NO2
**
** All met data is from the Koala Camp Weather Station
** To run the model type:
**
**    ISCST2EM K2007NO2 INP K2007NO2.OUT
**
** The results for this problem are provided in file K2007NO2 OUT
**
**NOTE: THE STACK HEIGHT FOR THE DIESEL POWER PLANT STACKS HAS BEEN
** INCREASED FROM 16.9 M TO 22 9 M  THE FUEL FOR THE DIESEL POWER STATION
**  CONTAINS 0 05 WT % SULPHUR   THE EVENTS PROCESSOR WILL BE USED FOR THIS
**  MODEL ITERATION   THE DIESEL GENERATORS @ 70% OF FULL LOAD WILL BE USED
**  TO PLOT 24-HOUR AND 7,416 HOUR NO2 CONCENTRATIONS  THE DIESEL POWER
**  PLANT EMISSION RATES HAVE BEEN INCREASED BY 15% TO ACCOUNT FOR ENGINE
**  TO ENGINE VARIABILITY AND TEST VARIABILITY.
**
**
** The Control parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds NOx-NO2
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  24  PERIOD
   POLLUTID  NOx
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
** EVENTFIL  EVE24NOX INP  DETAIL
   ERRORFIL  ERRORNOX.OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
**  The diesel power plant will operate at 70% of full load for 24 h/day
**  The emission rates have already been adjusted, so use a emission
**  factor of 1 0.
SO LOCATION  CAT3616A  POINT    43.0    45.0    466.0
SO EMISFACT  CAT3616A  HROFDY  24*1.0
SO LOCATION  CAT3616B  POINT    43 0    51.0    466 0
SO EMISFACT  CAT3616B  HROFDY  24*1 0
SO LOCATION  CAT3616C  POINT    43 0    57.0    466 0
SO EMISFACT  CAT3616C  HROFDY  24*1.0
SO LOCATION  CAT3616D  POINT    43 0    63 0    466.0
SO EMISFACT  CAT3616D  HROFDY  24*1 0
SO LOCATION  CAT3616E  POINT    43 0    69 0    466 0
SO EMISFACT  CAT3616E  HROFDY  24*1 0
SO LOCATION  CAT3616F  POINT    43 0    75 0    466 0
SO EMISFACT  CAT3616F  HROFDY  24*1.0
SO LOCATION  CAT3616G  POINT    43 0    81 0    466 0
SO EMISFACT  CAT3616G  HROFDY  24*1 0
SO LOCATION  CAT3616H  POINT    43 0    87 0    466.0
SO EMISFACT  CAT3616H  HROFDY  24*1 0
```

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**  The diesel fired heating boilers both operate Dec -Mar , one boiler operates
**  Sept., Oct., Nov  and Apr., no boiler operation May to August;
**  adjust emission factors accordingly.  Each boiler runs at avg  75% of full
**  load
SO LOCATION  GLYBOILA  POINT    12 0  -188 0    466.0
SO EMISFACT  GLYBOILA  MONTH   3*0 75  8*0 0  1*0 75
SO LOCATION  GLYBOILB  POINT    17 0  -188.0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0 75  4*0.0   4*0.75
**  The diesel generators will use 0 05% wt  sulfur fuel, the heating boilers
**  by Cleaver Brooks will use No. 2 distillate fuel @ 0 2% wt  sulfur,
**  no emission estimates are avail  for boilers using low sulfur fuel
** Point Sources        QS     HS     TS     VS    DS
** Parameters:         ----   ----   ----   ----   ---
SO SRCPARAM  CAT3616A  21 2    22 9   712.   20 2   0 9
SO SRCPARAM  CAT3616B  21 2    22.9   712.   20 2   0 9
SO SRCPARAM  CAT3616C  21 2    22 9   712    20 2   0 9
SO SRCPARAM  CAT3616D  21.2    22 9   712.   20 2   0 9
SO SRCPARAM  CAT3616E  21 2    22 9   712.   20 2   0 9
SO SRCPARAM  CAT3616F  21 2    22 9   712.   20.2   0.9
SO SRCPARAM  CAT3616G  21 2    22.9   712    20 2   0.9
SO SRCPARAM  CAT3616H  21 2    22.9   712    20 2   0.9
SO SRCPARAM  GLYBOILA  0.29    11 5   433     7 0   0 6
SO SRCPARAM  GLYBOILB  0 29    11 5   433.    7 0   0.6
**  Building heights and widths are input for calculation of building
**  downwash   Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise
   BUILDHGT  CAT3616A  36*13.9
   BUILDWID  CAT3616A   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616A   0 0    0 0    0.0    0 0    0.0    0.0    0.0    0 0
             CAT3616A   0 0    3 00   3.05   3 19   3.46   3 92   4.67   6 00
             CAT3616A   8 77 17.28 30 00 30 46 31 93 34 64 39 16 46.67
             CAT3616A  60 00 54 27 51 79 51 00
   BUILDHGT  CAT3616B  36*13.9
   BUILDWID  CAT3616B   0 0    0.0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616B   0 0    0 0    0.0    0.0    0 0    0.0    0 0    0 0
             CAT3616B   0.0    9.00   9 14   9 58 10 39 11 75 14.00 18 00
             CAT3616B  26 31 30 46 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616B  51 96 47 89 45 69 45 00
   BUILDHGT  CAT3616C  36*13 9
   BUILDWID  CAT3616C   0.0    0.0    0.0    0.0    0.0    0.0    0 0    0 0
             CAT3616C   0.0    0.0    0 0    0.0    0.0    0.0    0 0    0 0
             CAT3616C   0 0   15 00 15 23 15.96 17.32 19.58 23 33 30 00
             CAT3616C  31 93 30 46 30 00 30 46 31 93 34.64 39 16 46 67
             CAT3616C  45.03 41 50 39 60 39 00
   BUILDHGT  CAT3616D  36*13 9
   BUILDWID  CAT3616D   0 0    0 0    0.0    0 0    0 0    0 0    0 0    0.0
             CAT3616D   0.0    0 0    0.0    0 0    0 0    0 0    0.0    0 0
             CAT3616D   0.0  21.00 21.32 22.35 24 25 27 41 32.67 34 64
             CAT3616D  31.93 30.46 30 00 30.46 31 93 34 64 39 16 43 08
             CAT3616D  38 11 35 12 33 51 33 00
   BUILDHGT  CAT3616E  36*13.9
   BUILDWID  CAT3616E   0 0    0 0    0 0    0 0    0 0    0.0    0 0    0 0
             CAT3616E   0 0    0 0    0 0    0 0    0 0    0.0    0 0    0 0
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             CAT3616E   0 0  27.00 27.50 28 80 31.00 35.20 39.50 35 20
             CAT3616E  32 40 31.00 30 50 31.00 32.70 35.70 40 00 35 40
             CAT3616E  31 40 29 00 28 20 27.00
   BUILDHGT  CAT3616F  36*13.9
   BUILDWID  CAT3616F   0.0   0.0   0 0   0 0   0.0   0 0   0 0   0.0
             CAT3616F   0.0   0.0   0.0   0 0   0 0   0 0   0 0   0.0
             CAT3616F   0 0  33.00 33 50 35 20 38 30 42.80 39 50 35 00
             CAT3616F  32.20 30 80 30 60 31.00 32.50 35 30 33 30 28 10
             CAT3616F  24.80 22 90 21 90 21.00
   BUILDHGT  CAT3616G  36*13 9
   BUILDWID  CAT3616G   0.0   0 0   0.0   0 0   0 0   0 0   0 0   0 0
             CAT3616G   0 0   0 0   0.0   0 0   0 0   0 0   0.0   0 0
             CAT3616G   0 0  39.00 39.40 41 40 45 00 47 00 39.50 35.00
             CAT3616G  32.30 31 00 30.50 31 00 32 40 31 00 23.80 20.20
             CAT3616G  18 00 16 60 15.80 15 00
   BUILDHGT  CAT3616H  36*13 9
   BUILDWID  CAT3616H   0 0   0.0   0 0   0 0   0 0   0.0   0 0   0.0
             CAT3616H   0 0   0.0   0 0   0 0   0.0   0.0   0 0   0.0
             CAT3616H   0.0  45.00 45 40 47.50 51 50 47.00 39 50 35 00
             CAT3616H  32 40 31 00 30 40 31 00 28.50 19 50 15 20 12 70
             CAT3616H  11 40 10.50 10 00  9 00
   BUILDHGT  GLYBOILA  36*8 5
   BUILDWID  GLYBOILA  2 03  2.13  2 31  2.61  3 11 4 00  5 85  11 52
             GLYBOILA 21.00 21 32 22 35 14.00 10 89  9 14  8 08  7 45
             GLYBOILA  7 11  7 00  7 11  7.45  8 08  9 14 10.89 14 00
             GLYBOILA 22 35 28.43 28 00 21.00 11.52  5.85  4.00  3.11
             GLYBOILA  2 61  2 31  2.13  2.00
   BUILDHGT  GLYBOILB  36*8 5
   BUILDWID  GLYBOILB  2 03  2.13  2 31  2 61  3 11  4 00  5 85 11 52
             GLYBOILB 16.00 16.25 17 03 14 00 10.89  9 14  8 08  7 45
             GLYBOILB  7 11  7.00  7 11  7.45  8.08  9 14 10.89 14 00
             GLYBOILB 22 35 33 51 33.00 21 00 11.52  5 85  4 00  3 11
             GLYBOILB  2.61  2.31  2 13  2 00

**  The open pits are also sources of NO2 emissions from mobile equipment
**  Firstly, Koala Pit.
SO LOCATION  KOALAP AREA 400  200. 460.
SO SRCPARAM  KOALAP 0 00000439 1.0 525.0

**  Secondly, Fox Pit
SO LOCATION  FOXP AREA -4000. -6300  442
SO SRCPARAM  FOXP 0.0000571 1 0 575.0

**  Thirdly, Leslie Pit.
SO LOCATION  LESLIEP AREA -2300. -3800. 442
SO SRCPARAM  LESLIEP 0 0000282 1 0 800 0

**  The Sources are divided into three different groups below:
   SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D
   SRCGROUP  STATION CAT3616E CAT3616F CAT3616G CAT3616H
   SRCGROUP  STATION  GLYBOILA GLYBOILB
   SRCGROUP  OPENPIT  KOALAP FOXP LESLIEP
SO FINISHED
** Details for the REceptor grid are provided below
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RE STARTING
** A total of 498 discrete receptors will be used
RE DISCCART  -2500. -2500  457.
RE DISCCART  -2500  -2000  456.
RE DISCCART  -2500  -1500  456.
RE DISCCART  -2500  -1000  453
RE DISCCART  -2500   -750. 453
RE DISCCART  -2500.  -500  459
RE DISCCART  -2500   -400  468
RE DISCCART  -2500   -300  468.
RE DISCCART  -2500.  -200. 467
RE DISCCART  -2500   -100  466
RE DISCCART  -2500    100  467
RE DISCCART  -2500    200  468
RE DISCCART  -2500.   300  473
RE DISCCART  -2500    400  475
RE DISCCART  -2500    500  478
RE DISCCART  -2500    750  485
RE DISCCART  -2500   1000  485.
RE DISCCART  -2500   1500. 485.
RE DISCCART  -2500.  2000  501
RE DISCCART  -2500   2500  501
RE DISCCART  -2000  -2500  455
RE DISCCART  -2000. -2000  458.
RE DISCCART  -2000. -1500. 457
RE DISCCART  -2000. -1000  453
RE DISCCART  -2000   -750  450
RE DISCCART  -2000   -500  448
RE DISCCART  -2000   -400  448
RE DISCCART  -2000   -300  448.
RE DISCCART  -2000   -200. 448.
RE DISCCART  -2000   -100  451
RE DISCCART  -2000    100  466
RE DISCCART  -2000    200  464
RE DISCCART  -2000.   300. 465.
RE DISCCART  -2000    400  469
RE DISCCART  -2000    500  473
RE DISCCART  -2000    750  480.
RE DISCCART  -2000.  1000. 478.
RE DISCCART  -2000.  1500. 492.
RE DISCCART  -2000   2000  494
RE DISCCART  -2000   2500  505
RE DISCCART  -1500  -2500  448
RE DISCCART  -1500  -2000  452
RE DISCCART  -1500  -1500  455
RE DISCCART  -1500. -1000. 460.
RE DISCCART  -1500   -750. 454
RE DISCCART  -1500.  -500  454
RE DISCCART  -1500.  -400  454
RE DISCCART  -1500   -300  454
RE DISCCART  -1500.  -200. 454.
RE DISCCART  -1500   -100  454.
RE DISCCART  -1500    100  454.
RE DISCCART  -1500    200  454.
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RE DISCCART  -1500     300. 456
RE DISCCART  -1500     400. 463
RE DISCCART  -1500.    500  467
RE DISCCART  -1500.    750  477
RE DISCCART  -1500.   1000  477
RE DISCCART  -1500.   1500  487.
RE DISCCART  -1500.   2000. 487
RE DISCCART  -1500    2500. 497
RE DISCCART  -1000. -2500. 448
RE DISCCART  -1000   -2000. 448
RE DISCCART  -1000   -1500  453
RE DISCCART  -1000   -1000  453.
RE DISCCART  -1000    -750. 453.
RE DISCCART  -1000.   -500  453.
RE DISCCART  -1000    -400  453
RE DISCCART  -1000    -300. 456
RE DISCCART  -1000.   -200  455
RE DISCCART  -1000.   -100  455
RE DISCCART  -1000     100  454.
RE DISCCART  -1000     200  454
RE DISCCART  -1000     300. 454
RE DISCCART  -1000.    400  454
RE DISCCART  -1000.    500  455
RE DISCCART  -1000.    750  467
RE DISCCART  -1000.   1000  479
RE DISCCART  -1000.   1500  482.
RE DISCCART  -1000.   2000. 484
RE DISCCART  -1000.   2500  497
RE DISCCART   -750   -2500  448
RE DISCCART   -750   -2000  448
RE DISCCART   -750   -1500  454.
RE DISCCART   -750   -1000  456.
RE DISCCART   -750    -750  455
RE DISCCART   -750    -500  456
RE DISCCART   -750    -400  457
RE DISCCART   -750    -300. 460.
RE DISCCART   -750    -200. 458.
RE DISCCART   -750.   -100. 460
RE DISCCART   -750     100. 454
RE DISCCART   -750     200. 454.
RE DISCCART   -750     300. 454.
RE DISCCART   -750     400. 455
RE DISCCART   -750.    500  457
RE DISCCART   -750.    750  458.
RE DISCCART   -750    1000. 474
RE DISCCART   -750.   1500  487
RE DISCCART   -750.   2000  487
RE DISCCART   -750.   2500. 499.
RE DISCCART   -500.  -2500. 448
RE DISCCART   -500.  -2000  448
RE DISCCART   -500   -1500. 457
RE DISCCART   -500.  -1000  466
RE DISCCART   -500    -750  457
RE DISCCART   -500.   -500  457
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RE DISCCART   -500   -400  457
RE DISCCART   -500   -300. 457
RE DISCCART   -500   -200  456
RE DISCCART   -500   -100. 455
RE DISCCART   -500    100. 454
RE DISCCART   -500.   200  454
RE DISCCART   -500.   300  454.
RE DISCCART   -500.   400. 454
RE DISCCART   -500.   500. 455
RE DISCCART   -500.   750  455
RE DISCCART   -500.  1000  463
RE DISCCART   -500   1500  484
RE DISCCART   -500   2000. 485
RE DISCCART   -500.  2500  501
RE DISCCART   -400. -2500  448
RE DISCCART   -400  -2000. 450
RE DISCCART   -400  -1500. 465
RE DISCCART   -400  -1000. 457
RE DISCCART   -400   -750. 457.
RE DISCCART   -400   -500  457.
RE DISCCART   -400   -400  457.
RE DISCCART   -400.  -300. 455.
RE DISCCART   -400.  -200. 455.
RE DISCCART   -400   -100. 455.
RE DISCCART   -400    100  454.
RE DISCCART   -400    200  454.
RE DISCCART   -400    300. 454.
RE DISCCART   -400.   400  454
RE DISCCART   -400.   500. 454
RE DISCCART   -400    750  457
RE DISCCART   -400   1000  463
RE DISCCART   -400   1500. 475
RE DISCCART   -400   2000  485
RE DISCCART   -400   2500  499
RE DISCCART   -300  -2500  448
RE DISCCART   -300  -2000  457
RE DISCCART   -300  -1500. 467
RE DISCCART   -300  -1000  458
RE DISCCART   -300   -750  458
RE DISCCART   -300   -500  462
RE DISCCART   -300   -400. 459
RE DISCCART   -300   -300. 455
RE DISCCART   -300   -200. 454.
RE DISCCART   -300.  -100. 454.
RE DISCCART   -300.   100  454.
RE DISCCART   -300.   200  454
RE DISCCART   -300.   300  454.
RE DISCCART   -300.   400  454
RE DISCCART   -300    500  454.
RE DISCCART   -300    750  462.
RE DISCCART   -300   1000. 466.
RE DISCCART   -300.  1500  468
RE DISCCART   -300.  2000  487
RE DISCCART   -300   2500  495
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RE DISCCART   -200  -2500. 448
RE DISCCART   -200  -2000. 462
RE DISCCART   -200  -1500. 467
RE DISCCART   -200  -1000. 461
RE DISCCART   -200   -750. 462.
RE DISCCART   -200   -500. 464.
RE DISCCART   -200.  -400. 462.
RE DISCCART   -200   -300  457
RE DISCCART   -200   -200  456
RE DISCCART   -200   -100  457
RE DISCCART   -200    100  457
RE DISCCART   -200    200. 457
RE DISCCART   -200.   300  457
RE DISCCART   -200    400  456
RE DISCCART   -200    500  454
RE DISCCART   -200    750  460
RE DISCCART   -200.  1000  465
RE DISCCART   -200.  1500  470
RE DISCCART   -200   2000  482
RE DISCCART   -200   2500  490.
RE DISCCART   -100  -2500. 448.
RE DISCCART   -100  -2000  458
RE DISCCART   -100  -1500  469
RE DISCCART   -100  -1000  464
RE DISCCART   -100   -750  467
RE DISCCART   -100   -500. 463.
RE DISCCART   -100.  -400  463
RE DISCCART   -100   -300  457
RE DISCCART   -100   -200  457
RE DISCCART   -100   -100  457
RE DISCCART   -100    100. 457.
RE DISCCART   -100    200  458
RE DISCCART   -100    300  458
RE DISCCART   -100    400. 460.
RE DISCCART   -100.   500. 454.
RE DISCCART   -100    750. 460.
RE DISCCART   -100.  1000  463
RE DISCCART   -100.  1500  470
RE DISCCART   -100   2000  482
RE DISCCART   -100   2500  483
RE DISCCART    100. -2500  448.
RE DISCCART    100. -2000. 458.
RE DISCCART    100  -1500. 468
RE DISCCART    100  -1000  476
RE DISCCART    100   -750. 482
RE DISCCART    100.  -500  474.
RE DISCCART    100.  -400. 475.
RE DISCCART    100   -300. 475
RE DISCCART    100.  -200. 466.
RE DISCCART    100   -100  466
RE DISCCART    100    100  466
RE DISCCART    100    200  466
RE DISCCART    100    300  466
RE DISCCART    100.   400  459
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RE DISCCART    100     500  457.
RE DISCCART    100     750. 456
RE DISCCART    100    1000  470.
RE DISCCART    100    1500. 476
RE DISCCART    100.   2000  486
RE DISCCART    100    2500  478
RE DISCCART    200   -2500  448.
RE DISCCART    200   -2000  458
RE DISCCART    200   -1500. 468
RE DISCCART    200   -1000  477
RE DISCCART    200    -750  480
RE DISCCART    200    -500  478.
RE DISCCART    200.   -400  477
RE DISCCART    200.   -300  477
RE DISCCART    200    -200  470
RE DISCCART    200    -100  470
RE DISCCART    200     100  470.
RE DISCCART    200.    200. 470
RE DISCCART    200     300  468
RE DISCCART    200     400  462
RE DISCCART    200     500  457
RE DISCCART    200     750  455.
RE DISCCART    200.   1000  465
RE DISCCART    200    1500  474
RE DISCCART    200    2000  483
RE DISCCART    200    2500  476
RE DISCCART    300   -2500  452
RE DISCCART    300   -2000  468
RE DISCCART    300   -1500  473.
RE DISCCART    300.  -1000  482
RE DISCCART    300    -750  483
RE DISCCART    300    -500  477
RE DISCCART    300    -400  477
RE DISCCART    300.   -300. 476.
RE DISCCART    300    -200  474
RE DISCCART    300    -100  475
RE DISCCART    300     100  473
RE DISCCART    300.    200. 470.
RE DISCCART    300.    300. 467.
RE DISCCART    300.    400  463
RE DISCCART    300.    500  457
RE DISCCART    300     750  454
RE DISCCART    300    1000  462
RE DISCCART    300    1500  476
RE DISCCART    300    2000  477
RE DISCCART    300.   2500. 474.
RE DISCCART    400   -2500  457
RE DISCCART    400   -2000  469
RE DISCCART    400   -1500  475
RE DISCCART    400   -1000. 486
RE DISCCART    400.   -750  486
RE DISCCART    400.   -500. 477.
RE DISCCART    400.   -400  476.
RE DISCCART    400.   -300. 473.
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RE DISCCART    400    -200  469
RE DISCCART    400    -100  468.
RE DISCCART    400     100  468
RE DISCCART    400     200. 468.
RE DISCCART    400.    300. 465
RE DISCCART    400.    400  462
RE DISCCART    400.    500  455
RE DISCCART    400.    750. 454.
RE DISCCART    400.   1000. 454
RE DISCCART    400.   1500. 468
RE DISCCART    400.   2000  473
RE DISCCART    400.   2500  473
RE DISCCART    500   -2500  462
RE DISCCART    500   -2000  468.
RE DISCCART    500.  -1500. 478
RE DISCCART    500.  -1000  487
RE DISCCART    500.   -750  486
RE DISCCART    500.   -500  478
RE DISCCART    500    -400. 479
RE DISCCART    500    -300  481
RE DISCCART    500    -200  481
RE DISCCART    500    -100  477
RE DISCCART    500.    100  473
RE DISCCART    500.    200  468
RE DISCCART    500.    300  465.
RE DISCCART    500.    400. 457.
RE DISCCART    500.    500  454
RE DISCCART    500.    750  454
RE DISCCART    500.   1000  454
RE DISCCART    500.   1500  471
RE DISCCART    500.   2000  472
RE DISCCART    500    2500  472
RE DISCCART    750   -2500  462
RE DISCCART    750   -2000  474
RE DISCCART    750   -1500  483
RE DISCCART    750   -1000  493
RE DISCCART    750.   -750. 488.
RE DISCCART    750.   -500. 494.
RE DISCCART    750    -400  494
RE DISCCART    750    -300  487
RE DISCCART    750    -200  487
RE DISCCART    750    -100  484
RE DISCCART    750.    100. 482
RE DISCCART    750.    200. 477.
RE DISCCART    750.    300. 474.
RE DISCCART    750.    400. 472
RE DISCCART    750     500  465
RE DISCCART    750     750  458
RE DISCCART    750    1000  454
RE DISCCART    750    1500  457
RE DISCCART    750.   2000  464
RE DISCCART    750    2500. 473.
RE DISCCART   1000   -2500. 464.
RE DISCCART   1000.  -2000. 480
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RE DISCCART   1000   -1500. 482.
RE DISCCART   1000. -1000. 501.
RE DISCCART   1000    -750  490.
RE DISCCART   1000    -500  493.
RE DISCCART   1000    -400  493.
RE DISCCART   1000    -300. 493.
RE DISCCART   1000.   -200  484.
RE DISCCART   1000    -100  483
RE DISCCART   1000     100  483
RE DISCCART   1000     200. 481.
RE DISCCART   1000.    300  477.
RE DISCCART   1000     400  476
RE DISCCART   1000     500  472.
RE DISCCART   1000     750  467
RE DISCCART   1000    1000. 463.
RE DISCCART   1000.   1500. 456.
RE DISCCART   1000    2000. 466
RE DISCCART   1000    2500  483
RE DISCCART   1500   -2500  455
RE DISCCART   1500   -2000  473.
RE DISCCART   1500   -1500  481
RE DISCCART   1500   -1000  487
RE DISCCART   1500    -750  492
RE DISCCART   1500.   -500  487
RE DISCCART   1500.   -400  487
RE DISCCART   1500.   -300. 486.
RE DISCCART   1500.   -200  485
RE DISCCART   1500.   -100  483
RE DISCCART   1500.    100  483
RE DISCCART   1500     200  483
RE DISCCART   1500.    300. 483.
RE DISCCART   1500     400  483
RE DISCCART   1500     500  483
RE DISCCART   1500     750  483
RE DISCCART   1500.   1000  476
RE DISCCART   1500    1500  468.
RE DISCCART   1500    2000. 464.
RE DISCCART   1500    2500  475
RE DISCCART   2000.  -2500  454
RE DISCCART   2000.  -2000  468
RE DISCCART   2000   -1500  473
RE DISCCART   2000   -1000  485
RE DISCCART   2000.   -750  493
RE DISCCART   2000    -500  493.
RE DISCCART   2000    -400  489
RE DISCCART   2000    -300  486
RE DISCCART   2000    -200  484
RE DISCCART   2000.   -100  486.
RE DISCCART   2000.    100  486
RE DISCCART   2000     200. 487
RE DISCCART   2000     300. 487.
RE DISCCART   2000     400  487
RE DISCCART   2000     500  487
RE DISCCART   2000     750. 492
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```
RE DISCCART   2000.   1000. 487
RE DISCCART   2000.   1500. 470
RE DISCCART   2000.   2000. 464
RE DISCCART   2000.   2500  465
RE DISCCART   2500   -2500. 454.
RE DISCCART   2500   -2000. 473
RE DISCCART   2500   -1500. 468
RE DISCCART   2500.  -1000. 483
RE DISCCART   2500    -750. 484
RE DISCCART   2500    -500. 484
RE DISCCART   2500    -400. 484
RE DISCCART   2500    -300. 484.
RE DISCCART   2500.   -200. 484
RE DISCCART   2500    -100  484.
RE DISCCART   2500     100  489
RE DISCCART   2500     200. 494.
RE DISCCART   2500.    300  497.
RE DISCCART   2500     400  497
RE DISCCART   2500     500  497
RE DISCCART   2500     750  497
RE DISCCART   2500    1000  493.
RE DISCCART   2500    1500  484
RE DISCCART   2500    2000  473
RE DISCCART   2500    2500  468
RE DISCCART  10000     10000  475
RE DISCCART  10000    -10000  475
RE DISCCART      0    -10000. 475.
RE DISCCART      0.    10000. 475.
RE DISCCART  -10000.   10000. 475.
RE DISCCART  -10000   -10000  475
RE DISCCART   15000    15000  475.
RE DISCCART   15000.  -15000. 475.
RE DISCCART       0   -15000. 475
RE DISCCART       0    15000  475
RE DISCCART   15000        0  475
RE DISCCART  -15000.       0  475
RE DISCCART  -15000.   15000  475
RE DISCCART  -15000.  -15000. 475.
RE DISCCART       0.  -17500  475
RE DISCCART    5000   -17500  475
RE DISCCART   10000   -17500  475
RE DISCCART   15000   -17500  475
RE DISCCART   -5000   -17500. 475
RE DISCCART  -10000.  -17500. 475.
RE DISCCART  -15000   -17500. 475
RE DISCCART   20000    20000. 475
RE DISCCART   20000   -20000  475
RE DISCCART       0   -20000  475.
RE DISCCART       0.   20000  475
RE DISCCART  -20000    20000  475
RE DISCCART  -20000   -20000  475
RE DISCCART    2500    -5000   475
RE DISCCART    2500.   -7500.  475.
RE DISCCART    2500   -10000.  475.
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RE DISCCART    2500  -12500.  475.
RE DISCCART    2500. -15000   475
RE DISCCART    2500. -17500   475
RE DISCCART    2500  -20000   475
RE DISCCART   -5000   -2500.  475
RE DISCCART   10000   -2500.  475
RE DISCCART   15000   -2500   475.
RE DISCCART   20000.  -2500.  475.
RE DISCCART  -15000.  20000.  475
RE DISCCART  -10000.  20000.  475
RE DISCCART   -5000.  20000.  475
RE DISCCART    5000   20000   475
RE DISCCART   10000   20000   475
RE DISCCART   15000   20000   475.
RE DISCCART  -20000   15000   475.
RE DISCCART  -10000   15000   475.
RE DISCCART   -5000   15000   475.
RE DISCCART    5000   15000   475.
RE DISCCART   10000   15000.  475
RE DISCCART   20000.  15000   475
RE DISCCART  -20000.  10000   475
RE DISCCART  -15000   10000   475
RE DISCCART   -5000   10000   475
RE DISCCART    5000   10000   475
RE DISCCART   15000   10000.  475.
RE DISCCART   20000   10000.  475
RE DISCCART  -20000    5000.  475
RE DISCCART  -15000.   5000   475
RE DISCCART  -10000    5000.  475
RE DISCCART   -5000    5000.  475
RE DISCCART       0    5000.  475
RE DISCCART    5000    5000.  475
RE DISCCART   10000    5000.  475
RE DISCCART   15000    5000.  475
RE DISCCART   20000    5000.  475
RE DISCCART  -20000       0.  475.
RE DISCCART  -10000       0.  475
RE DISCCART   -5000.      0   475
RE DISCCART    5000       0.  475
RE DISCCART   10000       0.  475
RE DISCCART   20000       0.  475
RE DISCCART  -20000   -5000.  475.
RE DISCCART  -15000   -5000.  475
RE DISCCART  -10000   -5000.  475
RE DISCCART   -5000.  -5000   475
RE DISCCART      0.   -5000   475
RE DISCCART    5000   -5000   475
RE DISCCART   10000   -5000   475
RE DISCCART   15000   -5000   475
RE DISCCART   20000.  -5000   475.
RE DISCCART  -20000. -10000   475.
RE DISCCART  -15000. -10000.  475.
RE DISCCART   -5000. -10000.  475.
RE DISCCART    5000. -10000   475
```

```
RE DISCCART   15000. -10000   475
RE DISCCART   20000. -10000.  475
RE DISCCART  -20000. -15000.  475
RE DISCCART  -10000. -15000   475
RE DISCCART   -5000  -15000.  475.
RE DISCCART    5000  -15000.  475.
RE DISCCART   10000  -15000   475
RE DISCCART   20000  -15000.  475
RE DISCCART  -15000. -20000   475
RE DISCCART  -10000. -20000   475
RE DISCCART   -5000  -20000   475
RE DISCCART    5000  -20000   475.
RE DISCCART   10000  -20000.  475
RE DISCCART   15000. -20000   475
RE FINISHED

**  The MEteorology pathway begins here.
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used   The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model
   INPUTFIL  ISCST294 DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The EVent pathway begins here
**EV  STARTING
**    EVENTPER HIGHNOX  24  PWRPLANT  94030624
**    EVENTLOC 300 0  -750.0  483 0
**EV  FINISHED
**  The OUtput pathway begins here
OU STARTING

**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the Cdn. Ambient Air Qual  Objective for
**  nitrogen dioxide 24-hour is 200 ug/Nm^3 (acceptable)
   MAXIFILE 24 STATION 200.0 MAX24NOX.FIL 22
   MAXIFILE 24 OPENPIT 200.0 MAX24NOX FIL 22
**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
   PLOTFILE  1  STATION 1ST K2001NO1 FST 24
   PLOTFILE  1 OPENPIT 1ST K2001NO1 FST 24
```

```
   PLOTFILE  24   STATION 1ST K2007NO2.FST 25
   PLOTFILE  24   OPENPIT 1ST K2007NO2.FST 25
   PLOTFILE  PERIOD STATION  K2007NO3 FST 26
   PLOTFILE  PERIOD OPENPIT  K2007NO3 FST 26
OU FINISHED
```

APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No. 4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is SO2
**
** All met data is from the Koala Camp Weather Station
** To run the model type:
**
**    ISCST2EM K2007SO2 INP K2007SO2 OUT
**
** The results for this problem are provided in file K2007SO2 OUT.
**
**NOTE: THE DIESEL POWER PLANT STACK HEIGHT HAS BEEN INCREASED FROM
** 16 9 M TO 22.9 M  THE FUEL FOR THE DIESEL POWER STATION CONTAINS
** 0 05 WT % SULPHUR   THE EVENTS PROCESSOR WILL NOT BE USED FOR THIS
** MODEL ITERATION.  THE DIESEL GENERATORS @ 70% OF FULL LOAD WILL BE
**  USED TO PLOT 24-HOUR AND 7,416 HOUR SO2 CONCENTRATIONS
**
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds SO2
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  24  PERIOD
   POLLUTID  SO2
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
   ERRORFIL  ERRORSO2 OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
SO LOCATION  CAT3616A  POINT    43 0    45 0    466 0
**  The diesel power plant will operate at 70% of full load for 24 h/day.
**  The emission rates have already been adjusted, so use an emission
**  factor of 1 0.
SO EMISFACT  CAT3616A  HROFDY  24*1.0
SO LOCATION  CAT3616B  POINT    43 0    51.0    466 0
SO EMISFACT  CAT3616B  HROFDY  24*1.0
SO LOCATION  CAT3616C  POINT    43 0    57.0    466.0
SO EMISFACT  CAT3616C  HROFDY  24*1.0
SO LOCATION  CAT3616D  POINT    43 0    63.0    466.0
SO EMISFACT  CAT3616D  HROFDY  24*1 0
SO LOCATION  CAT3616E  POINT    43 0    69 0    466 0
SO EMISFACT  CAT3616E  HROFDY  24*1 0
SO LOCATION  CAT3616F  POINT    43.0    75 0    466 0
SO EMISFACT  CAT3616F  HROFDY  24*1 0
SO LOCATION  CAT3616G  POINT    43.0    81 0    466 0
SO EMISFACT  CAT3616G  HROFDY  24*1 0
SO LOCATION  CAT3616H  POINT    43 0    87 0    466.0
SO EMISFACT  CAT3616H  HROFDY  24*1 0

**  The diesel fired heating boilers both operate Dec -Mar., one boiler operates
**  Sept , Oct , Nov. and Apr., no boiler operation May to August;
**  adjust emission factors accordingly.  Each boiler runs at avg  75% of full
```

```
**  load   Assume Cleaver Brooks boilers
SO LOCATION  GLYBOILA  POINT    12 0  -188.0    466.0
SO EMISFACT  GLYBOILA  MONTH   3*0 75  8*0.0  1*0 75
SO LOCATION  GLYBOILB  POINT    17 0  -188 0    466 0
SO EMISFACT  GLYBOILB  MONTH   4*0.75  4*0 0   4*0 75
**  The diesel generators will use 0 05% wt. sulfur fuel, the heating boilers
**  will use No. 2 distillate fuel @ 0 2% wt. sulfur (no emission data avail
**  for low sulfur fuel).
** Point Sources         QS     HS    TS    VS   DS
** Parameters:          ----   ----  ----  ----  ---
   SRCPARAM  CAT3616A  0.181  22 9  712.  20 2  0 9
   SRCPARAM  CAT3616B  0.181  22 9  712.  20 2  0 9
   SRCPARAM  CAT3616C  0.181  22 9  712   20 2  0 9
   SRCPARAM  CAT3616D  0 181  22 9  712   20 2  0.9
   SRCPARAM  CAT3616E  0.181  22 9  712.  20.2  0 9
   SRCPARAM  CAT3616F  0 181  22 9  712   20 2  0 9
   SRCPARAM  CAT3616G  0.181  22 9  712   20.2  0 9
   SRCPARAM  CAT3616H  0.181  22 9  712.  20.2  0.9
   SRCPARAM  GLYBOILA  0 41   11 5  433    7 0  0 6
   SRCPARAM  GLYBOILB  0 41   11.5  433    7 0  0 6
**  Building heights and widths are input for calculation of building
**  downwash  Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise
   BUILDHGT  CAT3616A  36*13 9
   BUILDWID  CAT3616A   0 0   0 0   0.0   0 0   0 0   0 0   0.0   0 0
             CAT3616A   0 0   0 0   0.0   0 0   0 0   0 0   0.0   0.0
             CAT3616A   0.0   3.00  3 05  3 19  3 46  3 92  4 67  6.00
             CAT3616A   8 77 17 28 30 00 30.46 31 93 34.64 39.16 46.67
             CAT3616A  60 00 54 27 51.79 51 00
   BUILDHGT  CAT3616B  36*13 9
   BUILDWID  CAT3616B   0.0   0 0   0 0   0 0   0 0   0 0   0 0   0 0
             CAT3616B   0.0   0 0   0 0   0.0   0 0   0.0   0 0   0 0
             CAT3616B   0 0   9.00  9 14  9.58 10 39 11 75 14 00 18 00
             CAT3616B  26 31 30.46 30 00 30.46 31.93 34.64 39 16 46.67
             CAT3616B  51 96 47.89 45.69 45 00
   BUILDHGT  CAT3616C  36*13.9
   BUILDWID  CAT3616C   0.0   0.0   0 0   0.0   0 0   0 0   0 0   0 0
             CAT3616C   0 0   0.0   0 0   0.0   0 0   0.0   0 0   0 0
             CAT3616C   0 0  15 00 15.23 15.96 17.32 19.58 23 33 30 00
             CAT3616C  31 93 30.46 30 00 30.46 31 93 34 64 39 16 46.67
             CAT3616C  45.03 41.50 39 60 39 00
   BUILDHGT  CAT3616D  36*13 9
   BUILDWID  CAT3616D   0 0   0 0   0 0   0 0   0 0   0 0   0 0   0 0
             CAT3616D   0 0   0 0   0 0   0 0   0 0   0 0   0 0   0.0
             CAT3616D   0 0  21 00 21 32 22 35 24 25 27 41 32 67 34 64
             CAT3616D  31 93 30 46 30.00 30 46 31 93 34 64 39 16 43.08
             CAT3616D  38.11 35 12 33.51 33.00
   BUILDHGT  CAT3616E  36*13.9
   BUILDWID  CAT3616E   0.0   0.0   0.0   0 0   0 0   0 0   0.0   0 0
             CAT3616E   0.0   0 0   0 0   0 0   0 0   0 0   0 0   0.0
             CAT3616E   0.0  27 00 27 50 28 80 31 00 35 20 39 50 35 20
             CAT3616E  32 40 31 00 30 50 31 00 32 70 35 70 40 00 35.40
             CAT3616E  31 40 29 00 28 20 27.00
   BUILDHGT  CAT3616F  36*13 9
```

```
   BUILDWID  CAT3616F   0 0    0.0    0.0    0.0    0 0    0 0    0.0    0.0
             CAT3616F   0.0    0 0    0.0    0 0    0 0    0 0    0.0    0 0
             CAT3616F   0.0   33 00 33.50 35.20 38 30 42.80 39.50 35.00
             CAT3616F  32 20 30.80 30.60 31 00 32 50 35.30 33 30 28.10
             CAT3616F  24 80 22.90 21 90 21 00
   BUILDHGT  CAT3616G  36*13.9
   BUILDWID  CAT3616G   0.0    0 0    0.0    0 0    0 0    0 0    0 0    0.0
             CAT3616G   0.0    0 0    0.0    0 0    0 0    0 0    0 0    0.0
             CAT3616G   0.0   39 00 39.40 41 40 45 00 47 00 39.50 35.00
             CAT3616G  32 30 31 00 30.50 31 00 32 40 31 00 23.80 20 20
             CAT3616G  18 00 16 60 15.80 15 00
   BUILDHGT  CAT3616H  36*13 9
   BUILDWID  CAT3616H   0.0    0 0    0 0    0 0    0.0    0 0    0 0    0 0
             CAT3616H   0 0    0.0    0.0    0.0    0 0    0 0    0 0    0.0
             CAT3616H   0 0   45.00 45 40 47.50 51 50 47 00 39 50 35.00
             CAT3616H  32 40 31.00 30 40 31 00 28 50 19.50 15 20 12 70
             CAT3616H  11.40 10.50 10 00  9.00
   BUILDHGT  GLYBOILA  36*8 5
   BUILDWID  GLYBOILA  2 03   2 13   2.31   2 61   3 11  4 00   5.85  11.52
             GLYBOILA 21 00 21.32 22 35 14 00 10 89   9 14   8 08   7 45
             GLYBOILA  7 11   7.00   7 11   7 45   8 08   9.14 10 89 14 00
             GLYBOILA 22 35 28.43 28 00 21 00 11 52   5.85   4 00   3 11
             GLYBOILA  2.61   2 31   2 13   2 00
   BUILDHGT  GLYBOILB  36*8.5
   BUILDWID  GLYBOILB  2 03   2 13   2.31   2.61   3.11   4 00   5 85 11 52
             GLYBOILB 16 00 16.25 17 03 14 00 10 89   9 14   8 08   7 45
             GLYBOILB  7 11   7.00   7 11   7 45   8 08   9 14 10 89 14 00
             GLYBOILB 22.35 33 51 33 00 21.00 11 52   5 85   4 00   3 11
             GLYBOILB  2.61   2 31   2 13   2.00

**  The open pits are also sources of SO2 emissions from mobile equipment.
**  Firstly, Koala Pit.
SO LOCATION  KOALAP AREA 400  200  460.
SO SRCPARAM  KOALAP 0.000000356 1 0 525.0

**  Secondly, Fox Pit.
SO LOCATION  FOXP AREA -4000. -6300  442
SO SRCPARAM  FOXP 0.00000518 1 0 575 0

**  Thirdly, Leslie Pit
SO LOCATION  LESLIEP AREA -2300  -3800. 442.
SO SRCPARAM  LESLIEP 0.00000282 1 0 800 0

**  The Sources are divided into two different groups below:
SO SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D
SO SRCGROUP  STATION CAT3616E CAT3616F CAT3616G CAT3616H
SO SRCGROUP  STATION  GLYBOILA GLYBOILB
SO SRCGROUP  OPENPIT  KOALAP FOXP LESLIEP
SO FINISHED
** Details for the REceptor grid are provided below
RE STARTING
** A total of 498 discrete receptors will be used.
RE DISCCART  -2500  -2500  457
RE DISCCART  -2500  -2000  456
```

```
RE DISCCART  -2500. -1500. 456
RE DISCCART  -2500. -1000  453
RE DISCCART  -2500.  -750  453.
RE DISCCART  -2500.  -500. 459.
RE DISCCART  -2500.  -400. 468.
RE DISCCART  -2500   -300. 468.
RE DISCCART  -2500   -200. 467
RE DISCCART  -2500   -100. 466.
RE DISCCART  -2500    100. 467.
RE DISCCART  -2500    200. 468.
RE DISCCART  -2500.   300. 473
RE DISCCART  -2500    400  475
RE DISCCART  -2500    500  478
RE DISCCART  -2500    750. 485.
RE DISCCART  -2500.  1000. 485.
RE DISCCART  -2500   1500. 485.
RE DISCCART  -2500   2000. 501.
RE DISCCART  -2500   2500. 501.
RE DISCCART  -2000  -2500. 455
RE DISCCART  -2000. -2000  458
RE DISCCART  -2000. -1500  457
RE DISCCART  -2000. -1000  453
RE DISCCART  -2000.  -750  450
RE DISCCART  -2000.  -500  448
RE DISCCART  -2000.  -400  448
RE DISCCART  -2000.  -300  448.
RE DISCCART  -2000.  -200. 448
RE DISCCART  -2000.  -100  451
RE DISCCART  -2000.   100  466
RE DISCCART  -2000.   200  464
RE DISCCART  -2000.   300. 465.
RE DISCCART  -2000.   400. 469.
RE DISCCART  -2000    500  473
RE DISCCART  -2000    750  480
RE DISCCART  -2000   1000  478
RE DISCCART  -2000.  1500  492
RE DISCCART  -2000   2000. 494.
RE DISCCART  -2000   2500  505.
RE DISCCART  -1500  -2500  448
RE DISCCART  -1500  -2000  452
RE DISCCART  -1500  -1500. 455
RE DISCCART  -1500. -1000. 460.
RE DISCCART  -1500.  -750. 454.
RE DISCCART  -1500.  -500. 454.
RE DISCCART  -1500.  -400  454
RE DISCCART  -1500.  -300  454
RE DISCCART  -1500   -200  454
RE DISCCART  -1500   -100  454
RE DISCCART  -1500    100  454
RE DISCCART  -1500    200  454
RE DISCCART  -1500.   300  456.
RE DISCCART  -1500    400  463.
RE DISCCART  -1500    500. 467
RE DISCCART  -1500.   750. 477
```

```
RE DISCCART  -1500.  1000  477.
RE DISCCART  -1500.  1500  487.
RE DISCCART  -1500.  2000. 487
RE DISCCART  -1500.  2500. 497
RE DISCCART  -1000. -2500  448
RE DISCCART  -1000  -2000. 448.
RE DISCCART  -1000  -1500. 453.
RE DISCCART  -1000  -1000. 453.
RE DISCCART  -1000.  -750. 453.
RE DISCCART  -1000   -500. 453.
RE DISCCART  -1000.  -400. 453.
RE DISCCART  -1000   -300. 456.
RE DISCCART  -1000   -200. 455.
RE DISCCART  -1000   -100  455.
RE DISCCART  -1000    100  454
RE DISCCART  -1000    200  454.
RE DISCCART  -1000.   300  454
RE DISCCART  -1000.   400  454
RE DISCCART  -1000    500  455
RE DISCCART  -1000    750  467
RE DISCCART  -1000   1000  479
RE DISCCART  -1000   1500. 482.
RE DISCCART  -1000   2000. 484
RE DISCCART  -1000.  2500  497
RE DISCCART   -750  -2500  448
RE DISCCART   -750  -2000  448
RE DISCCART   -750  -1500  454
RE DISCCART   -750. -1000  456
RE DISCCART   -750   -750  455
RE DISCCART   -750   -500  456
RE DISCCART   -750   -400. 457.
RE DISCCART   -750   -300. 460.
RE DISCCART   -750.  -200. 458
RE DISCCART   -750   -100. 460
RE DISCCART   -750    100. 454.
RE DISCCART   -750    200  454.
RE DISCCART   -750    300. 454.
RE DISCCART   -750    400. 455.
RE DISCCART   -750.   500. 457.
RE DISCCART   -750    750. 458.
RE DISCCART   -750.  1000. 474.
RE DISCCART   -750.  1500  487.
RE DISCCART   -750.  2000. 487.
RE DISCCART   -750.  2500  499.
RE DISCCART   -500. -2500. 448.
RE DISCCART   -500. -2000  448.
RE DISCCART   -500  -1500  457
RE DISCCART   -500  -1000  466
RE DISCCART   -500   -750  457
RE DISCCART   -500   -500. 457
RE DISCCART   -500   -400. 457
RE DISCCART   -500.  -300. 457.
RE DISCCART   -500.  -200. 456.
RE DISCCART   -500.  -100. 455
```

```
RE DISCCART   -500     100  454
RE DISCCART   -500     200  454
RE DISCCART   -500.    300. 454
RE DISCCART   -500.    400  454
RE DISCCART   -500.    500  455
RE DISCCART   -500.    750. 455.
RE DISCCART   -500    1000. 463
RE DISCCART   -500    1500. 484.
RE DISCCART   -500    2000. 485.
RE DISCCART   -500    2500  501
RE DISCCART   -400   -2500  448
RE DISCCART   -400   -2000  450.
RE DISCCART   -400   -1500. 465
RE DISCCART   -400   -1000  457
RE DISCCART   -400    -750  457
RE DISCCART   -400    -500  457.
RE DISCCART   -400    -400. 457
RE DISCCART   -400    -300  455
RE DISCCART   -400.   -200  455
RE DISCCART   -400    -100  455.
RE DISCCART   -400     100  454.
RE DISCCART   -400     200. 454
RE DISCCART   -400     300. 454
RE DISCCART   -400.    400  454
RE DISCCART   -400.    500  454
RE DISCCART   -400     750  457.
RE DISCCART   -400    1000. 463
RE DISCCART   -400.   1500  475
RE DISCCART   -400.   2000  485
RE DISCCART   -400.   2500  499
RE DISCCART   -300.  -2500  448.
RE DISCCART   -300.  -2000. 457.
RE DISCCART   -300.  -1500. 467
RE DISCCART   -300.  -1000. 458
RE DISCCART   -300    -750. 458.
RE DISCCART   -300.   -500. 462.
RE DISCCART   -300.   -400. 459.
RE DISCCART   -300.   -300. 455
RE DISCCART   -300.   -200  454
RE DISCCART   -300.   -100  454
RE DISCCART   -300     100  454
RE DISCCART   -300     200  454.
RE DISCCART   -300.    300. 454
RE DISCCART   -300     400  454
RE DISCCART   -300     500  454
RE DISCCART   -300     750  462
RE DISCCART   -300    1000  466
RE DISCCART   -300    1500. 468.
RE DISCCART   -300    2000. 487.
RE DISCCART   -300.   2500. 495
RE DISCCART   -200.  -2500  448.
RE DISCCART   -200.  -2000  462.
RE DISCCART   -200   -1500  467
RE DISCCART   -200   -1000  461
```

```
RE DISCCART   -200.   -750  462
RE DISCCART   -200.   -500  464.
RE DISCCART   -200.   -400. 462
RE DISCCART   -200    -300. 457
RE DISCCART   -200    -200  456
RE DISCCART   -200    -100  457.
RE DISCCART   -200     100  457.
RE DISCCART   -200     200  457.
RE DISCCART   -200     300  457.
RE DISCCART   -200     400. 456
RE DISCCART   -200     500. 454
RE DISCCART   -200.    750  460
RE DISCCART   -200    1000  465
RE DISCCART   -200    1500. 470
RE DISCCART   -200.   2000  482
RE DISCCART   -200.   2500  490
RE DISCCART   -100.  -2500  448.
RE DISCCART   -100.  -2000. 458.
RE DISCCART   -100.  -1500. 469
RE DISCCART   -100   -1000  464
RE DISCCART   -100    -750  467
RE DISCCART   -100    -500. 463.
RE DISCCART   -100    -400. 463.
RE DISCCART   -100    -300  457.
RE DISCCART   -100    -200  457.
RE DISCCART   -100.   -100  457
RE DISCCART   -100     100  457
RE DISCCART   -100     200  458
RE DISCCART   -100     300. 458
RE DISCCART   -100     400. 460
RE DISCCART   -100.    500  454
RE DISCCART   -100     750  460
RE DISCCART   -100    1000  463
RE DISCCART   -100    1500  470.
RE DISCCART   -100    2000. 482
RE DISCCART   -100    2500  483
RE DISCCART    100.  -2500  448
RE DISCCART    100   -2000  458
RE DISCCART    100   -1500  468.
RE DISCCART    100.  -1000  476
RE DISCCART    100.   -750  482
RE DISCCART    100    -500  474
RE DISCCART    100    -400  475
RE DISCCART    100    -300. 475.
RE DISCCART    100    -200  466.
RE DISCCART    100    -100. 466
RE DISCCART    100     100. 466
RE DISCCART    100     200. 466
RE DISCCART    100     300. 466
RE DISCCART    100.    400. 459.
RE DISCCART    100.    500  457
RE DISCCART    100.    750  456.
RE DISCCART    100    1000  470
RE DISCCART    100    1500  476
```

```
RE DISCCART    100    2000  486
RE DISCCART    100.   2500  478
RE DISCCART    200.  -2500  448
RE DISCCART    200.  -2000  458.
RE DISCCART    200   -1500. 468
RE DISCCART    200   -1000. 477
RE DISCCART    200    -750. 480
RE DISCCART    200    -500. 478.
RE DISCCART    200    -400  477.
RE DISCCART    200    -300  477.
RE DISCCART    200    -200. 470
RE DISCCART    200    -100  470
RE DISCCART    200     100  470
RE DISCCART    200     200  470.
RE DISCCART    200     300  468
RE DISCCART    200.    400  462
RE DISCCART    200.    500  457.
RE DISCCART    200     750  455.
RE DISCCART    200    1000. 465
RE DISCCART    200    1500. 474
RE DISCCART    200    2000. 483
RE DISCCART    200.   2500. 476
RE DISCCART    300   -2500. 452.
RE DISCCART    300   -2000  468.
RE DISCCART    300   -1500. 473
RE DISCCART    300   -1000  482
RE DISCCART    300    -750  483
RE DISCCART    300    -500  477.
RE DISCCART    300    -400  477
RE DISCCART    300    -300  476
RE DISCCART    300    -200  474
RE DISCCART    300.   -100  475
RE DISCCART    300     100  473
RE DISCCART    300     200  470.
RE DISCCART    300.    300  467
RE DISCCART    300.    400  463
RE DISCCART    300     500  457
RE DISCCART    300     750  454
RE DISCCART    300.   1000. 462
RE DISCCART    300.   1500  476
RE DISCCART    300.   2000  477
RE DISCCART    300.   2500  474
RE DISCCART    400   -2500  457
RE DISCCART    400   -2000  469
RE DISCCART    400   -1500  475
RE DISCCART    400   -1000. 486.
RE DISCCART    400    -750  486.
RE DISCCART    400    -500  477
RE DISCCART    400    -400  476
RE DISCCART    400    -300  473
RE DISCCART    400    -200  469
RE DISCCART    400    -100  468
RE DISCCART    400     100. 468
RE DISCCART    400     200. 468.
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RE DISCCART    400     300. 465
RE DISCCART    400     400. 462
RE DISCCART    400     500. 455
RE DISCCART    400.    750  454
RE DISCCART    400.   1000  454.
RE DISCCART    400    1500  468.
RE DISCCART    400    2000. 473
RE DISCCART    400    2500. 473
RE DISCCART    500   -2500. 462
RE DISCCART    500.  -2000. 468
RE DISCCART    500   -1500  478
RE DISCCART    500   -1000  487.
RE DISCCART    500    -750. 486
RE DISCCART    500.   -500. 478
RE DISCCART    500    -400. 479.
RE DISCCART    500    -300  481.
RE DISCCART    500    -200. 481.
RE DISCCART    500.   -100  477
RE DISCCART    500.    100  473
RE DISCCART    500     200  468
RE DISCCART    500     300  465
RE DISCCART    500     400  457.
RE DISCCART    500     500. 454
RE DISCCART    500     750  454
RE DISCCART    500    1000  454
RE DISCCART    500    1500  471
RE DISCCART    500    2000. 472
RE DISCCART    500    2500. 472
RE DISCCART    750.  -2500  462
RE DISCCART    750   -2000  474
RE DISCCART    750   -1500  483
RE DISCCART    750   -1000  493.
RE DISCCART    750.   -750  488.
RE DISCCART    750.   -500  494.
RE DISCCART    750.   -400. 494
RE DISCCART    750.   -300  487
RE DISCCART    750.   -200  487
RE DISCCART    750.   -100  484
RE DISCCART    750.    100. 482
RE DISCCART    750.    200  477
RE DISCCART    750.    300  474
RE DISCCART    750     400  472
RE DISCCART    750     500  465.
RE DISCCART    750     750  458
RE DISCCART    750.   1000  454
RE DISCCART    750    1500  457
RE DISCCART    750.   2000  464
RE DISCCART    750    2500  473
RE DISCCART   1000   -2500  464
RE DISCCART   1000   -2000  480.
RE DISCCART   1000.  -1500. 482.
RE DISCCART   1000.  -1000. 501
RE DISCCART   1000    -750. 490
RE DISCCART   1000    -500. 493.
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RE DISCCART   1000    -400   493
RE DISCCART   1000    -300   493
RE DISCCART   1000    -200   484
RE DISCCART   1000    -100   483.
RE DISCCART   1000     100   483.
RE DISCCART   1000.    200   481
RE DISCCART   1000.    300   477
RE DISCCART   1000     400   476
RE DISCCART   1000     500   472
RE DISCCART   1000     750   467
RE DISCCART   1000    1000   463
RE DISCCART   1000.   1500   456
RE DISCCART   1000.   2000.  466
RE DISCCART   1000.   2500   483
RE DISCCART   1500.  -2500.  455
RE DISCCART   1500.  -2000.  473
RE DISCCART   1500.  -1500   481
RE DISCCART   1500.  -1000   487
RE DISCCART   1500.   -750   492
RE DISCCART   1500.   -500.  487.
RE DISCCART   1500.   -400   487
RE DISCCART   1500.   -300.  486
RE DISCCART   1500.   -200   485
RE DISCCART   1500.   -100   483
RE DISCCART   1500.    100   483.
RE DISCCART   1500.    200.  483
RE DISCCART   1500.    300   483
RE DISCCART   1500.    400   483
RE DISCCART   1500.    500   483
RE DISCCART   1500.    750   483
RE DISCCART   1500.   1000   476
RE DISCCART   1500.   1500.  468.
RE DISCCART   1500.   2000   464
RE DISCCART   1500.   2500   475
RE DISCCART   2000.  -2500   454
RE DISCCART   2000.  -2000   468
RE DISCCART   2000.  -1500.  473.
RE DISCCART   2000   -1000   485
RE DISCCART   2000    -750   493
RE DISCCART   2000    -500   493
RE DISCCART   2000    -400   489
RE DISCCART   2000    -300   486
RE DISCCART   2000    -200   484
RE DISCCART   2000    -100   486
RE DISCCART   2000     100   486.
RE DISCCART   2000     200.  487
RE DISCCART   2000     300.  487.
RE DISCCART   2000.    400   487
RE DISCCART   2000     500   487
RE DISCCART   2000     750   492
RE DISCCART   2000.   1000   487
RE DISCCART   2000    1500   470
RE DISCCART   2000    2000   464
RE DISCCART   2000    2500   465
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```
RE DISCCART   2500   -2500. 454
RE DISCCART   2500   -2000. 473
RE DISCCART   2500   -1500  468.
RE DISCCART   2500   -1000  483.
RE DISCCART   2500    -750  484.
RE DISCCART   2500    -500  484
RE DISCCART   2500.   -400  484
RE DISCCART   2500.   -300  484
RE DISCCART   2500    -200  484
RE DISCCART   2500    -100  484
RE DISCCART   2500     100  489
RE DISCCART   2500.    200  494
RE DISCCART   2500     300  497
RE DISCCART   2500     400  497
RE DISCCART   2500.    500. 497
RE DISCCART   2500     750  497
RE DISCCART   2500    1000  493
RE DISCCART   2500    1500  484
RE DISCCART   2500    2000  473
RE DISCCART   2500    2500  468
RE DISCCART  10000     10000. 475
RE DISCCART  10000    -10000. 475
RE DISCCART      0.   -10000  475
RE DISCCART      0     10000  475
RE DISCCART  -10000    10000  475
RE DISCCART  -10000   -10000  475.
RE DISCCART   15000    15000. 475
RE DISCCART   15000   -15000  475
RE DISCCART       0   -15000. 475
RE DISCCART       0    15000. 475.
RE DISCCART   15000.       0. 475
RE DISCCART  -15000        0. 475
RE DISCCART  -15000    15000. 475
RE DISCCART  -15000   -15000. 475
RE DISCCART       0   -17500  475
RE DISCCART    5000   -17500. 475.
RE DISCCART   10000   -17500. 475
RE DISCCART   15000   -17500. 475
RE DISCCART   -5000   -17500. 475.
RE DISCCART  -10000   -17500. 475
RE DISCCART  -15000   -17500. 475.
RE DISCCART   20000    20000  475
RE DISCCART   20000.  -20000. 475
RE DISCCART       0.  -20000  475
RE DISCCART       0.   20000  475
RE DISCCART  -20000    20000  475
RE DISCCART  -20000   -20000  475
RE DISCCART    2500    -5000   475
RE DISCCART    2500    -7500.  475
RE DISCCART    2500   -10000   475
RE DISCCART    2500.  -12500.  475
RE DISCCART    2500.  -15000   475
RE DISCCART    2500.  -17500   475
RE DISCCART    2500   -20000   475
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RE DISCCART   -5000   -2500   475.
RE DISCCART   10000.  -2500   475.
RE DISCCART   15000   -2500   475
RE DISCCART   20000   -2500.  475.
RE DISCCART  -15000   20000.  475
RE DISCCART  -10000   20000.  475
RE DISCCART   -5000.  20000   475
RE DISCCART    5000.  20000   475.
RE DISCCART   10000   20000   475
RE DISCCART   15000   20000   475.
RE DISCCART  -20000   15000   475.
RE DISCCART  -10000   15000   475.
RE DISCCART   -5000   15000   475.
RE DISCCART    5000   15000   475.
RE DISCCART   10000   15000   475
RE DISCCART   20000   15000.  475
RE DISCCART  -20000.  10000.  475
RE DISCCART  -15000   10000   475
RE DISCCART   -5000   10000.  475
RE DISCCART    5000   10000.  475
RE DISCCART   15000   10000.  475
RE DISCCART   20000   10000.  475
RE DISCCART  -20000    5000.  475
RE DISCCART  -15000    5000   475
RE DISCCART  -10000    5000.  475.
RE DISCCART   -5000    5000.  475
RE DISCCART       0.   5000.  475
RE DISCCART    5000.   5000.  475
RE DISCCART   10000.   5000   475
RE DISCCART   15000.   5000   475
RE DISCCART   20000.   5000   475.
RE DISCCART  -20000.      0.  475.
RE DISCCART  -10000.      0   475.
RE DISCCART   -5000.      0   475
RE DISCCART    5000.      0   475.
RE DISCCART   10000.      0   475.
RE DISCCART   20000.      0.  475.
RE DISCCART  -20000.  -5000   475.
RE DISCCART  -15000.  -5000   475.
RE DISCCART  -10000.  -5000   475.
RE DISCCART   -5000.  -5000   475.
RE DISCCART       0.  -5000.  475.
RE DISCCART    5000   -5000   475
RE DISCCART   10000   -5000   475
RE DISCCART   15000   -5000   475
RE DISCCART   20000   -5000.  475
RE DISCCART  -20000  -10000.  475
RE DISCCART  -15000  -10000.  475.
RE DISCCART   -5000. -10000.  475
RE DISCCART    5000  -10000   475
RE DISCCART   15000  -10000   475
RE DISCCART   20000  -10000   475
RE DISCCART  -20000  -15000   475
RE DISCCART  -10000  -15000   475
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```
RE DISCCART   -5000. -15000   475.
RE DISCCART    5000. -15000   475
RE DISCCART   10000. -15000   475.
RE DISCCART   20000. -15000   475.
RE DISCCART  -15000  -20000   475.
RE DISCCART  -10000  -20000   475.
RE DISCCART   -5000  -20000.  475
RE DISCCART    5000  -20000.  475
RE DISCCART   10000  -20000   475
RE DISCCART   15000. -20000.  475.
RE FINISHED

**  The MEteorology pathway begins here.
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used   The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model  There are gaps in the met data
   INPUTFIL  ISCST294 DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The OUtput pathway begins here.
OU STARTING
**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the Cdn  Ambient Air Qual  Objective for
**  sulfur dioxide 24-hour is 300 ug/Nm^3 (acceptable)
   MAXIFILE  24  STATION  300.0   MAX24SO2 FIL 21
   MAXIFILE  24  OPENPIT 300.0 MAX24SO2 FIL 21
**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows.
   PLOTFILE  1  STATION 1ST K2001SO1 FST 24
   PLOTFILE  1 OPENPIT 1ST K2001SO1.FST 24
   PLOTFILE  24  STATION 1ST K2007SO2 FST 23
   PLOTFILE  24  OPENPIT 1ST K2007SO2 FST 23
   PLOTFILE  PERIOD STATION  K2007SOA FST 26
   PLOTFILE  PERIOD OPENPIT  K2007SOA FST 26
OU FINISHED
```

APPENDIX IV-B1 ISC2 AIR DISPERSION MODEL INPUT FILE

```
**Project No. 4551 BHP Minerals Canada NWT Diamonds
**Modeller: Dan Jarratt, Rescan Environmental Services
**The contaminant being modelled is CO
**
** All met data is from the Koala Camp Weather Station
** To run the model type:
**
**    ISCST2EM K2007CO INP K2007CO.OUT
**
** The results for this problem are provided in file K2007CO OUT
**
**NOTE: THE DIESEL POWER PLANT STACK HEIGHT 22 9M FOR THIS MODEL
**  ITERATION  THE FUEL FOR THE DIESEL
**  POWER STATION CONTAINS 0 05 WT % SULPHUR   THE CO EMISSION RATE HAS
**  BEEN INCREASED BY 30% TO ACCOUNT FOR AIR QUALITY PERMIT APPLICATION
**  PURPOSES   THE EVENT PROCESSOR WILL NOT BE USED FOR THIS ITERATION
**  THE POWER GENERATORS @ 82 5 % OF FULL LOAD WILL BE USED TO PLOT
**  1-HOUR CO CONCENTRATIONS
** The COntrol parameters for this model run are as follows:
CO STARTING
   TITLEONE  BHP NWT Diamonds CO
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  8  PERIOD
   POLLUTID  CO
   TERRHGTS  ELEV
   ELEVUNIT  METERS
   RUNORNOT  RUN
   ERRORFIL  ERRORCO.OUT
CO FINISHED

** The SOurces included in this model run are as follows:
SO STARTING
**  The diesel power plant will operate at 70% of full load for 24 h/day.
**  The emiaaion rates have already been adjusted, so use a emission
**  factor of 1.0
SO LOCATION  CAT3616A  POINT    43.0    45.0    466 0
SO EMISFACT  CAT3616A  HROFDY  24*1 0
SO LOCATION  CAT3616B  POINT    43.0    51 0    466.0
SO EMISFACT  CAT3616B  HROFDY  24*1 0
SO LOCATION  CAT3616C  POINT    43 0    57 0    466 0
SO EMISFACT  CAT3616C  HROFDY  24*1 0
SO LOCATION  CAT3616D  POINT    43.0    63.0    466 0
SO EMISFACT  CAT3616D  HROFDY  24*1.0
SO LOCATION  CAT3616E  POINT    43 0    69 0    466 0
SO EMISFACT  CAT3616E  HROFDY  24*1 0
SO LOCATION  CAT3616F  POINT    43 0    75 0    466 0
SO EMISFACT  CAT3616F  HROFDY  24*1 0
SO LOCATION  CAT3616G  POINT    43 0    81 0    466.0
SO EMISFACT  CAT3616G  HROFDY  24*1.0
SO LOCATION  CAT3616H  POINT    43 0    87 0    466 0
SO EMISFACT  CAT3616H  HROFDY  24*1.0

**  The diesel fired heating boilers both operate Dec -Mar , one boiler operates
**  Sept , Oct , Nov  and Apr , no boiler operation May to August;
```

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**  adjust emission factors accordingly.  Each boiler runs at avg  75% of full
**  load
SO LOCATION  GLYBOILA  POINT    12.0  -188 0    466 0
SO EMISFACT  GLYBOILA  MONTH   3*0 75  8*0 0  1*0 75
SO LOCATION  GLYBOILB  POINT    17 0  -188.0    466.0
SO EMISFACT  GLYBOILB  MONTH   4*0.75  4*0.0   4*0 75
**  The diesel generators will use 0 05% wt  sulfur fuel, the heating boilers
**  will use No  2 distillate fuel @ 0 2% wt  sulfur (no emission estimates
**  avail  for boiler using low sulfur fuel).
** Point Sources         QS       HS     TS     VS    DS
** Parameters:          ----     ----   ----   ----   ---
SO SRCPARAM  CAT3616A  0.882    22 9   712.   20.2   0.9
SO SRCPARAM  CAT3616B  0.882    22 9   712.   20 2   0 9
SO SRCPARAM  CAT3616C  0.882    22.9   712    20 2   0.9
SO SRCPARAM  CAT3616D  0.882    22 9   712.   20.2   0.9
SO SRCPARAM  CAT3616E  0.882  22 9   712.   20.2   0 9
SO SRCPARAM  CAT3616F  0 882  22.9   712.   20 2   0 9
SO SRCPARAM  CAT3616G  0 882  22 9   712    20 2   0 9
SO SRCPARAM  CAT3616H  0 882  22 9   712.   20.2   0 9
SO SRCPARAM  GLYBOILA  0 065  11 5   433     7 0   0.6
SO SRCPARAM  GLYBOILB  0 065  11 5   433     7 0   0.6
**  Building heights and widths are input for calculation of building
**  downwash   Building widths are input beginning with the 10 degree
**  flow vector and incrementing by 10 degrees clockwise
   BUILDHGT  CAT3616A  36*13 9
   BUILDWID  CAT3616A   0 0    0 0    0 0    0.0    0.0    0 0    0 0    0 0
             CAT3616A   0 0    0 0    0.0    0 0    0.0    0 0    0 0    0 0
             CAT3616A   0.0    3.00   3 05   3 19   3 46   3 92   4.67   6 00
             CAT3616A   8.77 17 28 30 00 30 46 31 93 34 64 39 16 46 67
             CAT3616A  60.00 54 27 51 79 51 00
   BUILDHGT  CAT3616B  36*13.9
   BUILDWID  CAT3616B   0 0    0 0    0 0    0 0    0 0    0.0    0 0    0 0
             CAT3616B   0 0    0.0    0 0    0 0    0.0    0.0    0 0    0 0
             CAT3616B   0 0    9 00   9 14   9 58 10.39 11 75 14 00 18.00
             CAT3616B  26 31 30 46 30 00 30 46 31.93 34 64 39.16 46.67
             CAT3616B  51 96 47 89 45 69 45.00
   BUILDHGT  CAT3616C  36*13 9
   BUILDWID  CAT3616C   0.0    0.0    0 0    0.0    0.0    0 0    0 0    0 0
             CAT3616C   0.0    0.0    0 0    0.0    0 0    0.0    0.0    0 0
             CAT3616C   0 0  15.00 15 23 15.96 17 32 19.58 23 33 30 00
             CAT3616C  31 93 30 46 30.00 30 46 31 93 34 64 39 16 46.67
             CAT3616C  45 03 41.50 39.60 39.00
   BUILDHGT  CAT3616D  36*13.9
   BUILDWID  CAT3616D   0 0    0.0    0 0    0 0    0 0    0 0    0 0    0.0
             CAT3616D   0.0    0 0    0 0    0 0    0.0    0 0    0 0    0 0
             CAT3616D   0 0  21 00 21 32 22 35 24 25 27.41 32 67 34 64
             CAT3616D  31 93 30 46 30.00 30 46 31 93 34 64 39 16 43 08
             CAT3616D  38.11 35 12 33.51 33 00
   BUILDHGT  CAT3616E  36*13.9
   BUILDWID  CAT3616E   0 0    0 0    0 0    0 0    0 0    0 0    0 0    0 0
             CAT3616E   0.0    0 0    0 0    0 0    0.0    0.0    0 0    0.0
             CAT3616E   0 0  27 00 27 50 28.80 31 00 35.20 39 50 35 20
             CAT3616E  32.40 31.00 30 50 31.00 32 70 35 70 40 00 35 40
             CAT3616E  31.40 29.00 28 20 27 00
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   BUILDHGT  CAT3616F  36*13 9
   BUILDWID  CAT3616F   0 0   0.0   0.0   0.0   0.0   0 0   0 0   0 0
             CAT3616F   0 0   0 0   0 0   0 0   0 0   0 0   0 0   0.0
             CAT3616F   0.0  33 00 33 50 35.20 38 30 42 80 39 50 35.00
             CAT3616F  32 20 30 80 30 60 31 00 32 50 35.30 33.30 28 10
             CAT3616F  24 80 22.90 21 90 21.00
   BUILDHGT  CAT3616G  36*13.9
   BUILDWID  CAT3616G   0.0   0 0   0 0   0.0   0.0   0 0   0 0   0 0
             CAT3616G   0.0   0 0   0.0   0 0   0 0   0 0   0 0   0 0
             CAT3616G   0 0  39 00 39 40 41 40 45 00 47 00 39.50 35.00
             CAT3616G  32 30 31.00 30.50 31 00 32 40 31 00 23 80 20 20
             CAT3616G  18 00 16 60 15.80 15 00
   BUILDHGT  CAT3616H  36*13.9
   BUILDWID  CAT3616H   0 0   0 0   0 0   0 0   0 0   0 0   0 0   0.0
             CAT3616H   0 0   0 0   0 0   0.0   0 0   0 0   0 0   0.0
             CAT3616H   0 0  45.00 45 40 47.50 51 50 47 00 39.50 35.00
             CAT3616H  32.40 31.00 30 40 31.00 28.50 19.50 15 20 12 70
             CAT3616H  11 40 10 50 10.00  9 00
   BUILDHGT  GLYBOILA  36*8 5
   BUILDWID  GLYBOILA  2 03  2.13  2 31  2 61  3 11 4 00  5 85  11.52
             GLYBOILA 21.00 21 32 22 35 14.00 10 89  9.14  8 08  7 45
             GLYBOILA  7 11  7.00  7 11  7.45  8.08  9 14 10 89 14 00
             GLYBOILA 22 35 28.43 28.00 21.00 11 52  5 85  4 00  3 11
             GLYBOILA  2 61  2 31  2.13  2 00
   BUILDHGT  GLYBOILB  36*8 5
   BUILDWID  GLYBOILB  2 03  2.13  2 31  2 61  3.11  4 00  5 85 11 52
             GLYBOILB 16 00 16.25 17 03 14 00 10 89  9 14  8 08  7 45
             GLYBOILB  7 11  7 00  7 11  7.45  8.08  9 14 10.89 14.00
             GLYBOILB 22 35 33 51 33.00 21 00 11 52  5 85  4 00  3 11
             GLYBOILB  2 61  2 31  2.13  2 00

**  The open pits are also sources of CO emissions from mobile equipment
**  Firstly, Koala Pit
SO LOCATION  KOALAP AREA 400  200  460
SO SRCPARAM  KOALAP 0 000000687 1 0 525.0

**  Secondly, Fox Pit
SO LOCATION  FOXP AREA -4000  -6300  442
SO SRCPARAM  FOXP 0 0000093 1 0 575 0

**  Thirdly, Leslie Pit
SO LOCATION  LESLIEP AREA -2300. -3800  442
SO SRCPARAM  LESLIEP 0.00000462 1 0 800 0

**  The Sources are divided into three different groups below:
SO SRCGROUP  STATION CAT3616A CAT3616B CAT3616C CAT3616D
SO SRCGROUP  STATION CAT3616E CAT3616F CAT3616G CAT3616H
SO SRCGROUP  STATION  GLYBOILA GLYBOILB
SO SRCGROUP  OPENPIT  KOALAP FOXP LESLIEP
SO FINISHED
** Details for the REceptor grid are provided below
RE STARTING
** A total of 498 discrete receptors will be used
RE DISCCART  -2500. -2500  457.
```

```
RE DISCCART  -2500   -2000  456.
RE DISCCART  -2500   -1500  456.
RE DISCCART  -2500   -1000. 453
RE DISCCART  -2500    -750. 453
RE DISCCART  -2500.   -500  459
RE DISCCART  -2500.   -400  468
RE DISCCART  -2500.   -300. 468.
RE DISCCART  -2500.   -200. 467
RE DISCCART  -2500    -100. 466
RE DISCCART  -2500     100. 467
RE DISCCART  -2500     200. 468
RE DISCCART  -2500     300  473
RE DISCCART  -2500     400. 475.
RE DISCCART  -2500     500  478.
RE DISCCART  -2500     750  485.
RE DISCCART  -2500    1000  485
RE DISCCART  -2500    1500  485.
RE DISCCART  -2500    2000. 501.
RE DISCCART  -2500.   2500. 501.
RE DISCCART  -2000.  -2500  455
RE DISCCART  -2000   -2000  458.
RE DISCCART  -2000   -1500  457
RE DISCCART  -2000   -1000. 453
RE DISCCART  -2000.   -750  450
RE DISCCART  -2000.   -500  448
RE DISCCART  -2000    -400  448
RE DISCCART  -2000    -300  448
RE DISCCART  -2000    -200  448
RE DISCCART  -2000    -100. 451.
RE DISCCART  -2000.    100  466
RE DISCCART  -2000     200  464
RE DISCCART  -2000     300  465
RE DISCCART  -2000     400  469.
RE DISCCART  -2000.    500. 473
RE DISCCART  -2000.    750  480
RE DISCCART  -2000    1000  478
RE DISCCART  -2000    1500  492
RE DISCCART  -2000    2000  494
RE DISCCART  -2000    2500  505.
RE DISCCART  -1500   -2500. 448.
RE DISCCART  -1500.  -2000  452
RE DISCCART  -1500   -1500  455
RE DISCCART  -1500   -1000  460
RE DISCCART  -1500    -750. 454
RE DISCCART  -1500    -500. 454
RE DISCCART  -1500.   -400. 454.
RE DISCCART  -1500    -300. 454
RE DISCCART  -1500    -200  454.
RE DISCCART  -1500.   -100  454
RE DISCCART  -1500.    100  454
RE DISCCART  -1500.    200  454
RE DISCCART  -1500     300  456
RE DISCCART  -1500     400  463.
RE DISCCART  -1500.    500  467
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RE DISCCART  -1500.   750. 477
RE DISCCART  -1500.  1000. 477
RE DISCCART  -1500   1500. 487.
RE DISCCART  -1500   2000. 487.
RE DISCCART  -1500   2500. 497.
RE DISCCART  -1000  -2500. 448.
RE DISCCART  -1000. -2000  448
RE DISCCART  -1000. -1500  453
RE DISCCART  -1000. -1000  453
RE DISCCART  -1000   -750  453
RE DISCCART  -1000   -500  453
RE DISCCART  -1000   -400. 453
RE DISCCART  -1000   -300  456
RE DISCCART  -1000   -200  455
RE DISCCART  -1000   -100  455.
RE DISCCART  -1000    100. 454
RE DISCCART  -1000.   200. 454
RE DISCCART  -1000.   300  454
RE DISCCART  -1000.   400  454
RE DISCCART  -1000.   500  455.
RE DISCCART  -1000    750  467
RE DISCCART  -1000.  1000. 479
RE DISCCART  -1000.  1500  482
RE DISCCART  -1000.  2000  484
RE DISCCART  -1000   2500  497.
RE DISCCART   -750  -2500. 448.
RE DISCCART   -750. -2000  448.
RE DISCCART   -750  -1500  454.
RE DISCCART   -750  -1000  456.
RE DISCCART   -750   -750. 455.
RE DISCCART   -750   -500. 456.
RE DISCCART   -750.  -400  457.
RE DISCCART   -750   -300  460.
RE DISCCART   -750   -200  458
RE DISCCART   -750   -100  460
RE DISCCART   -750    100  454.
RE DISCCART   -750.   200. 454
RE DISCCART   -750    300  454
RE DISCCART   -750    400  455
RE DISCCART   -750    500  457.
RE DISCCART   -750.   750. 458
RE DISCCART   -750.  1000. 474
RE DISCCART   -750.  1500  487
RE DISCCART   -750   2000. 487.
RE DISCCART   -750   2500. 499
RE DISCCART   -500  -2500. 448.
RE DISCCART   -500. -2000  448.
RE DISCCART   -500. -1500  457
RE DISCCART   -500. -1000  466
RE DISCCART   -500.  -750  457.
RE DISCCART   -500   -500. 457.
RE DISCCART   -500.  -400  457
RE DISCCART   -500   -300  457
RE DISCCART   -500   -200  456
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RE DISCCART   -500.  -100  455
RE DISCCART   -500.   100  454
RE DISCCART   -500.   200  454
RE DISCCART   -500    300  454.
RE DISCCART   -500    400. 454.
RE DISCCART   -500.   500  455
RE DISCCART   -500    750  455.
RE DISCCART   -500   1000  463.
RE DISCCART   -500   1500. 484
RE DISCCART   -500   2000. 485
RE DISCCART   -500   2500. 501
RE DISCCART   -400  -2500  448
RE DISCCART   -400. -2000  450
RE DISCCART   -400  -1500  465
RE DISCCART   -400  -1000. 457
RE DISCCART   -400.  -750  457
RE DISCCART   -400.  -500  457
RE DISCCART   -400.  -400. 457.
RE DISCCART   -400   -300. 455
RE DISCCART   -400.  -200  455
RE DISCCART   -400.  -100  455
RE DISCCART   -400    100  454
RE DISCCART   -400    200  454
RE DISCCART   -400    300  454.
RE DISCCART   -400    400. 454
RE DISCCART   -400    500. 454.
RE DISCCART   -400.   750. 457
RE DISCCART   -400   1000. 463
RE DISCCART   -400   1500  475.
RE DISCCART   -400   2000. 485.
RE DISCCART   -400   2500. 499
RE DISCCART   -300  -2500  448
RE DISCCART   -300  -2000  457
RE DISCCART   -300  -1500  467
RE DISCCART   -300  -1000. 458
RE DISCCART   -300   -750. 458.
RE DISCCART   -300   -500  462
RE DISCCART   -300   -400  459
RE DISCCART   -300   -300  455
RE DISCCART   -300   -200. 454
RE DISCCART   -300   -100. 454.
RE DISCCART   -300.   100  454.
RE DISCCART   -300.   200  454.
RE DISCCART   -300.   300  454
RE DISCCART   -300.   400  454
RE DISCCART   -300.   500  454
RE DISCCART   -300    750  462
RE DISCCART   -300   1000  466
RE DISCCART   -300   1500  468
RE DISCCART   -300   2000  487
RE DISCCART   -300   2500. 495.
RE DISCCART   -200  -2500  448
RE DISCCART   -200  -2000  462
RE DISCCART   -200  -1500  467
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RE DISCCART   -200. -1000  461.
RE DISCCART   -200.  -750  462.
RE DISCCART   -200   -500. 464.
RE DISCCART   -200   -400. 462.
RE DISCCART   -200   -300  457.
RE DISCCART   -200.  -200  456.
RE DISCCART   -200   -100  457.
RE DISCCART   -200    100  457.
RE DISCCART   -200    200  457
RE DISCCART   -200    300. 457
RE DISCCART   -200    400. 456
RE DISCCART   -200    500  454
RE DISCCART   -200    750  460
RE DISCCART   -200   1000  465
RE DISCCART   -200   1500. 470
RE DISCCART   -200   2000. 482
RE DISCCART   -200   2500  490
RE DISCCART   -100  -2500  448
RE DISCCART   -100  -2000  458
RE DISCCART   -100  -1500  469
RE DISCCART   -100. -1000. 464
RE DISCCART   -100.  -750  467
RE DISCCART   -100.  -500  463
RE DISCCART   -100.  -400  463
RE DISCCART   -100   -300  457.
RE DISCCART   -100   -200. 457.
RE DISCCART   -100   -100. 457.
RE DISCCART   -100.   100. 457.
RE DISCCART   -100    200. 458.
RE DISCCART   -100    300  458
RE DISCCART   -100    400. 460.
RE DISCCART   -100.   500  454
RE DISCCART   -100    750  460
RE DISCCART   -100   1000  463
RE DISCCART   -100   1500  470
RE DISCCART   -100   2000  482
RE DISCCART   -100   2500. 483.
RE DISCCART    100. -2500. 448.
RE DISCCART    100. -2000  458.
RE DISCCART    100. -1500  468.
RE DISCCART    100. -1000  476.
RE DISCCART    100.  -750  482
RE DISCCART    100.  -500. 474
RE DISCCART    100.  -400  475
RE DISCCART    100.  -300  475
RE DISCCART    100   -200  466
RE DISCCART    100   -100  466
RE DISCCART    100    100  466
RE DISCCART    100    200  466
RE DISCCART    100    300  466
RE DISCCART    100    400  459
RE DISCCART    100.   500. 457
RE DISCCART    100.   750  456
RE DISCCART    100   1000  470
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RE DISCCART     100     1500  476.
RE DISCCART     100.    2000  486
RE DISCCART     100     2500  478
RE DISCCART     200    -2500  448
RE DISCCART     200    -2000  458
RE DISCCART     200    -1500. 468
RE DISCCART     200    -1000. 477
RE DISCCART     200     -750. 480
RE DISCCART     200.    -500  478
RE DISCCART     200.    -400  477
RE DISCCART     200     -300  477
RE DISCCART     200     -200  470
RE DISCCART     200.    -100. 470
RE DISCCART     200.     100  470
RE DISCCART     200      200  470.
RE DISCCART     200      300  468
RE DISCCART     200      400  462.
RE DISCCART     200.     500. 457
RE DISCCART     200      750  455
RE DISCCART     200     1000  465
RE DISCCART     200     1500  474.
RE DISCCART     200     2000  483.
RE DISCCART     200     2500  476
RE DISCCART     300    -2500  452
RE DISCCART     300    -2000  468
RE DISCCART     300    -1500  473.
RE DISCCART     300    -1000. 482
RE DISCCART     300.    -750. 483
RE DISCCART     300     -500  477
RE DISCCART     300     -400  477
RE DISCCART     300.    -300  476
RE DISCCART     300.    -200. 474
RE DISCCART     300.    -100  475
RE DISCCART     300      100  473
RE DISCCART     300      200  470
RE DISCCART     300      300  467
RE DISCCART     300.     400  463
RE DISCCART     300.     500. 457.
RE DISCCART     300.     750. 454.
RE DISCCART     300.    1000  462
RE DISCCART     300     1500  476
RE DISCCART     300     2000  477
RE DISCCART     300     2500  474
RE DISCCART     400    -2500  457.
RE DISCCART     400    -2000  469.
RE DISCCART     400.   -1500. 475
RE DISCCART     400.   -1000. 486
RE DISCCART     400     -750  486.
RE DISCCART     400     -500  477
RE DISCCART     400     -400  476
RE DISCCART     400.    -300  473.
RE DISCCART     400.    -200  469.
RE DISCCART     400     -100. 468.
RE DISCCART     400      100  468
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RE DISCCART    400     200. 468
RE DISCCART    400     300. 465
RE DISCCART    400     400  462.
RE DISCCART    400     500  455.
RE DISCCART    400.    750  454
RE DISCCART    400.   1000  454
RE DISCCART    400    1500  468
RE DISCCART    400.   2000  473
RE DISCCART    400    2500  473.
RE DISCCART    500   -2500. 462
RE DISCCART    500   -2000  468
RE DISCCART    500.  -1500. 478
RE DISCCART    500   -1000. 487
RE DISCCART    500    -750  486.
RE DISCCART    500    -500. 478.
RE DISCCART    500.   -400  479.
RE DISCCART    500    -300  481
RE DISCCART    500    -200  481.
RE DISCCART    500    -100  477.
RE DISCCART    500     100  473
RE DISCCART    500     200. 468
RE DISCCART    500.    300  465
RE DISCCART    500.    400  457
RE DISCCART    500     500  454
RE DISCCART    500     750  454
RE DISCCART    500    1000  454.
RE DISCCART    500.   1500  471
RE DISCCART    500    2000  472
RE DISCCART    500    2500  472
RE DISCCART    750   -2500  462
RE DISCCART    750   -2000  474.
RE DISCCART    750.  -1500. 483
RE DISCCART    750.  -1000  493
RE DISCCART    750.   -750  488
RE DISCCART    750.   -500  494
RE DISCCART    750.   -400  494
RE DISCCART    750.   -300. 487.
RE DISCCART    750.   -200  487
RE DISCCART    750    -100  484
RE DISCCART    750     100  482
RE DISCCART    750     200. 477.
RE DISCCART    750     300  474
RE DISCCART    750.    400. 472.
RE DISCCART    750.    500  465.
RE DISCCART    750.    750  458
RE DISCCART    750    1000  454
RE DISCCART    750    1500  457
RE DISCCART    750    2000  464
RE DISCCART    750    2500  473
RE DISCCART   1000   -2500  464
RE DISCCART   1000   -2000  480.
RE DISCCART   1000.  -1500  482
RE DISCCART   1000   -1000  501
RE DISCCART   1000    -750  490
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RE DISCCART   1000.  -500  493
RE DISCCART   1000.  -400  493
RE DISCCART   1000.  -300  493
RE DISCCART   1000.  -200  484.
RE DISCCART   1000.  -100. 483
RE DISCCART   1000.   100  483
RE DISCCART   1000    200  481
RE DISCCART   1000    300  477.
RE DISCCART   1000    400  476.
RE DISCCART   1000    500. 472.
RE DISCCART   1000    750  467.
RE DISCCART   1000   1000. 463
RE DISCCART   1000.  1500  456
RE DISCCART   1000   2000  466
RE DISCCART   1000   2500. 483
RE DISCCART   1500. -2500  455
RE DISCCART   1500  -2000  473
RE DISCCART   1500  -1500  481.
RE DISCCART   1500  -1000. 487
RE DISCCART   1500.  -750  492
RE DISCCART   1500.  -500  487
RE DISCCART   1500.  -400  487
RE DISCCART   1500.  -300  486
RE DISCCART   1500   -200  485
RE DISCCART   1500   -100. 483.
RE DISCCART   1500    100. 483
RE DISCCART   1500.   200  483
RE DISCCART   1500    300  483
RE DISCCART   1500    400  483.
RE DISCCART   1500    500. 483
RE DISCCART   1500    750  483
RE DISCCART   1500   1000  476.
RE DISCCART   1500   1500  468
RE DISCCART   1500   2000  464.
RE DISCCART   1500   2500. 475.
RE DISCCART   2000  -2500. 454.
RE DISCCART   2000. -2000  468.
RE DISCCART   2000  -1500  473
RE DISCCART   2000. -1000  485
RE DISCCART   2000   -750  493
RE DISCCART   2000.  -500  493
RE DISCCART   2000   -400  489
RE DISCCART   2000.  -300  486
RE DISCCART   2000.  -200  484
RE DISCCART   2000.  -100  486
RE DISCCART   2000.   100  486.
RE DISCCART   2000    200  487
RE DISCCART   2000    300  487
RE DISCCART   2000    400. 487.
RE DISCCART   2000    500. 487
RE DISCCART   2000.   750  492
RE DISCCART   2000   1000  487
RE DISCCART   2000   1500. 470
RE DISCCART   2000   2000. 464
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RE DISCCART   2000    2500  465
RE DISCCART   2500   -2500. 454.
RE DISCCART   2500   -2000. 473.
RE DISCCART   2500   -1500. 468.
RE DISCCART   2500   -1000. 483.
RE DISCCART   2500    -750. 484.
RE DISCCART   2500    -500  484
RE DISCCART   2500    -400  484
RE DISCCART   2500    -300  484.
RE DISCCART   2500    -200. 484
RE DISCCART   2500    -100  484
RE DISCCART   2500.    100  489
RE DISCCART   2500     200  494.
RE DISCCART   2500.    300. 497
RE DISCCART   2500     400  497
RE DISCCART   2500     500  497
RE DISCCART   2500     750  497
RE DISCCART   2500    1000. 493.
RE DISCCART   2500    1500. 484
RE DISCCART   2500.   2000  473
RE DISCCART   2500    2500  468
RE DISCCART  10000     10000  475.
RE DISCCART  10000    -10000  475.
RE DISCCART      0    -10000. 475
RE DISCCART      0.    10000  475
RE DISCCART  -10000    10000  475.
RE DISCCART  -10000   -10000  475.
RE DISCCART   15000    15000  475.
RE DISCCART   15000   -15000  475.
RE DISCCART       0   -15000. 475
RE DISCCART       0.   15000. 475
RE DISCCART   15000        0  475
RE DISCCART  -15000        0  475.
RE DISCCART  -15000    15000  475.
RE DISCCART  -15000.  -15000. 475.
RE DISCCART       0   -17500  475
RE DISCCART    5000   -17500  475
RE DISCCART   10000   -17500. 475.
RE DISCCART   15000.  -17500  475.
RE DISCCART   -5000   -17500  475
RE DISCCART  -10000   -17500  475
RE DISCCART  -15000   -17500  475
RE DISCCART   20000.   20000  475
RE DISCCART   20000.  -20000  475
RE DISCCART       0.  -20000  475.
RE DISCCART       0.   20000. 475
RE DISCCART  -20000.   20000. 475
RE DISCCART  -20000.  -20000  475
RE DISCCART    2500    -5000   475
RE DISCCART    2500    -7500   475
RE DISCCART    2500   -10000.  475.
RE DISCCART    2500.  -12500.  475
RE DISCCART    2500   -15000.  475
RE DISCCART    2500   -17500   475
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RE DISCCART    2500  -20000   475.
RE DISCCART   -5000   -2500   475.
RE DISCCART   10000   -2500   475.
RE DISCCART   15000   -2500.  475.
RE DISCCART   20000   -2500   475
RE DISCCART  -15000.  20000   475
RE DISCCART  -10000   20000.  475
RE DISCCART   -5000   20000.  475
RE DISCCART    5000   20000.  475
RE DISCCART   10000   20000.  475
RE DISCCART   15000   20000.  475
RE DISCCART  -20000   15000.  475
RE DISCCART  -10000.  15000.  475
RE DISCCART   -5000   15000   475
RE DISCCART    5000   15000.  475.
RE DISCCART   10000   15000.  475
RE DISCCART   20000   15000.  475
RE DISCCART  -20000   10000   475
RE DISCCART  -15000   10000   475
RE DISCCART   -5000   10000   475.
RE DISCCART    5000   10000.  475
RE DISCCART   15000.  10000.  475
RE DISCCART   20000.  10000.  475
RE DISCCART  -20000    5000.  475
RE DISCCART  -15000    5000.  475
RE DISCCART  -10000    5000.  475.
RE DISCCART   -5000    5000.  475
RE DISCCART       0    5000   475
RE DISCCART    5000    5000   475
RE DISCCART   10000    5000   475
RE DISCCART   15000    5000   475
RE DISCCART   20000    5000   475.
RE DISCCART  -20000       0.  475
RE DISCCART  -10000.      0.  475
RE DISCCART   -5000       0.  475
RE DISCCART    5000       0   475
RE DISCCART   10000       0.  475
RE DISCCART   20000.      0.  475.
RE DISCCART  -20000.  -5000.  475
RE DISCCART  -15000   -5000.  475
RE DISCCART  -10000   -5000.  475
RE DISCCART   -5000   -5000.  475.
RE DISCCART       0   -5000   475
RE DISCCART    5000   -5000   475.
RE DISCCART   10000   -5000   475
RE DISCCART   15000.  -5000.  475
RE DISCCART   20000   -5000   475
RE DISCCART  -20000. -10000   475
RE DISCCART  -15000. -10000   475
RE DISCCART   -5000. -10000   475
RE DISCCART    5000  -10000   475.
RE DISCCART   15000. -10000.  475.
RE DISCCART   20000  -10000   475.
RE DISCCART  -20000. -15000.  475
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RE DISCCART  -10000   -15000.  475
RE DISCCART   -5000   -15000   475
RE DISCCART    5000   -15000   475.
RE DISCCART   10000   -15000   475
RE DISCCART   20000   -15000   475
RE DISCCART  -15000. -20000    475.
RE DISCCART  -10000. -20000    475
RE DISCCART   -5000. -20000    475.
RE DISCCART    5000. -20000    475.
RE DISCCART   10000   -20000   475.
RE DISCCART   15000   -20000   475.
RE FINISHED

**  The MEteorology pathway begins here
ME STARTING
**  There are no on-site upper air data available, so assumed mixing heights
**  were used   The WDROTATE is used to convert the
**  weather station wind directions (from which the wind is blowing)
**  to the wind vector (direction toward which the wind is blowing)
**  required by the ISCST2 model.  There are gaps in the met data
   INPUTFIL  ISCST294 DAT
   ANEMHGHT  10  METERS
   SURFDATA  94823  1994  KOALCAMP
   UAIRDATA  94823  1994  NOTAVAIL
   STARTEND  94 01 01   94 12 31
   DAYRANGE  01/01-03/23  04/10-05/27  06/15-07/09  07/21-10/25  11/05-12/31
   WDROTATE  180
ME FINISHED
**  The OUtput pathway begins here
OU STARTING

**  RECTABLE will o/p high value summary for each receptor
   RECTABLE  ALLAVE  FIRST

**  MAXTABLE will o/p overall maximum value summary tables
   MAXTABLE  ALLAVE  50

**  MAXIFILE will o/p all occurrences of violations of a user-specified
**  threshold, in this case the Cdn. Ambient Air Qual. Objective for
**  carbon monoxide 1-hour 15 mg/Nm^3 (acceptable).
   MAXIFILE  1  STATION  15000.0   MAXICO FIL 21
   MAXIFILE  1  OPENPIT 15000 0 MAXICO FIL 21

**  PLOTFILE will o/p to a file suitable for import into a graphics
**  package, in this case Surfer for Windows
   PLOTFILE  1  STATION  1ST K2007CO.FST 22
   PLOTFILE  1  OPENPIT 1ST K2007CO FST 22
OU FINISHED
```

Appendix IV-B2

Calculations and Assumptions Used to Prepare Aircraft Noise Contours for BHP Diamonds Project Koala Airport

Prepared for:
Rescan Environmental Services Ltd.
Vancouver, B.C.

File No: 1900-95A
95 05 09

Barron
Kennedy
Lyzun &
Associates

BARRON KENNEDY LYZUN & ASSOCIATES LTD *Consultants in Acoustics*
#250 - 145 West 17th Street, North Vancouver, B C V7M 3G4 Tel. (604) 988-2508, Fax· (604) 988-7457

Introduction

This report describes the assumptions made and the data used for preparation of aircraft noise contours for the Koala Airport at the BHP Diamonds Project, N.W. Territories. The raw data used for the contours was provided to Barron Kennedy Lyzun & Associates Ltd. by BJP Diamonds Inc. to Barron Kennedy Lyzun, Acoustical Consultants in early May, 1995.

The sets of contours produced include Noise Exposure Forecasts (NEF), Equivalent Sound Levels (Leq) and Sound Exposure Levels (SEL). The NEF contours were prepared using the Transport Canada NEF Computer Program, version 1.7. The Leq and SEL contours were prepared using the Federal Aviation Administration, Integrated Noise Model (INM) version 3.10 with INM Database Version 10. NEF contours were plotted by hand using screen prints of the contours. Leq and SEL contours were plotted using the INM - PC Version Contour Plotting Program, Release 2.

Operating Scenarios

The numbers and types of aircraft expected to visit the Koala airport during various stages of the project are summarized in Table 1. The 1,950 m long unpaved runway was built to accommodate the aircraft listed in this table. During the construction period, the heaviest usage will be during the summer months (mid May to mid September) when the hours of daylight are long and the runway is free of snow. During the summer months, up to 16 flights per day may arrive and take off but on an average summer day, the airport may receive about six flights. Only three flights per week are expected throughout the winter months during construction. During the operations period, air flights will be more consistent year round with up to eight flights per day and an average of approximately three flights per day. Based upon these estimated numbers, the Peak Planning Day used to compute NEFs is assumed

Table 1 Anticipated Numbers of Aircraft Trips to Site

Aircraft	Annual Trips
Construction Period (Contractors)	
B727 or B737 Combi-Jet	148
Hercules C130	109
DC4/DC3/HS748/C46 Prop Cargo	149
Twin Otter, etc.	14
Gulf Stream	72
Total for Construction Period	492
Preproduction Period	
B727 or B737 Combi-Jet	170
B727 or B737 Cargo Jet	20
Hercules C130	20
DC4/DC3/HS748/C46 Prop Cargo	48
Twin Otter, etc.	172
Total for Preproduction Period	430
Operations Period	
(1998-2006 - Years 1-9)	
B727 or B737 Combi-Jet	208
B727 or B737 Cargo Jet	15
DC4/DC3/HS748/C46 Prop Cargo	52
Twin Otter, etc.	208
Small Jets	26
Total for Years 1-9	509
(2007-Onwards - Years 10-25)	
B727 or B737 Combi-Jet	260
B727 or B737 Cargo Jet	20
DC4/DC3/HS748/C46 Prop Cargo	72
Twin Otter, etc.	292
Small Jets	26
Total for Years 10-25	670

to be 8 flights (16 movements) and the Average Day used to compute Leqs is assumed to be 3 flights (6 movements).

For the purpose of predicting airport noise contours, the aircraft types and numbers indicated in Table 1 for years 2007 and beyond have been assumed as they represent a worst case scenario. The type of large jet (Boeing 727 or Boeing 737) used will depend upon the carrier contracted to serve the airport. As the 737 is significantly quieter than the 727, two sets of contours have been prepared, one for each type of jet.

Operating Assumptions

As noted above 16 movements per day are assumed for the Peak Planning Day and 6 movements per day are assumed for the Average Day. In both cases these are estimates used in the absence of any more reliable information. For the aircraft type mix used in the contour preparation, it is assumed that the mix is proportional to the number of aircraft flights as indicated below.

Aircraft Type	Scenario 1	Scenario 2
727 Cargo or Combi-Jet	41.8 %	0.0 %
737 Cargo or Combi-Jet	0.0 %	41.8 %
C46/DC3/DC4/HS748	10.7 %	10.7%
Twin Otter (DHC-6)	43.6 %	43.6 %
Small jets	3.9 %	3.9%

It is assumed for the purposes of modelling that:

The 727 Combi-jet is best represented by data for the B-727-200 with JT8D-17 engines.

The 737 Cargo jet is best represented by data for the B-737 with JT8D-7 engines.

The Twin Otter is included in the NEF and INM databases.

The C46/DC3/DC4/HS748 aircraft class of movements has been modeled using a single aircraft type. The DC-3 and HS748 are represented in the NEF and INM databases but the C46 and DC-4 aircraft are not. It is assumed that this series of heavy twin engine propeller aircraft is best represented by the DC-3. Use of the DC-6, which is included in the database likely overestimates the noise energy produced. Use of HS-748 data is likely not representative. The following text explains more.

The C-46 is a cargo/passenger aircraft equipped with two Pratt & Whitney R-2800-51M1, 2000 hp piston engines and has performance specifications of 48,000 lb. maximum takeoff weight and 162 knot cruise speed.

The DC-4 is a cargo/passenger aircraft equipped with two Pratt & Whitney R-2000-2SD-13G, 1450 hp radial piston engines and has performance specifications of 73,000 lb. maximum takeoff weight and 177 knot cruise speed. Transport Canada recommends, in their memorandum *Technical Note # 4: New List of NEF Aircraft Coding Equivalencies*, coding the DC-4 as a DC-6.

The DC-6 was built as an enlarged, pressurized successor to the DC-4. It is a 48-52 passenger aircraft equipped with four Pratt & Whitney R-2800-CB-16, 2400 hp radial piston engines and has performance specifications of 107,000 lb. maximum takeoff weight and 274 knot cruise speed. As the DC-6 is substantially larger and has twice the number of engines of the DC-4, it can be expected that contours produced using the DC-6 as the modeled aircraft type will be over estimates.

The HS-748 is a cargo/passenger aircraft equipped with two Rolls-Royce Dart Rda7 Mk 532-2L or -2S, 2280 shp turboprop engines and has performance specifications of 44,495 lb. maximum takeoff weight and 242 knot cruise speed. As this aircraft is equipped with turboprop engines while the remaining aircraft are equipped with piston engines, this aircraft's data is likely not a good representative of the data fro the remaining aircraft in this group.

The DC-3 is a cargo/passenger aircraft equipped with two Pratt & Whitney R-1830-90C/D, 1200 hp radial piston and has performance specifications of 28,000 lb. maximum takeoff weight and 168 knot cruise speed.

The “small jets” aircraft type is best represented by data for the Gulfstream G2B which is one of the largest "small jets" and one which could be used frequently at this airport.

Airport Physical Data

The airport consists of a single unpaved runway labelled 02-20 of length 1,950 m (6400 ft). The runway is oriented approximately 23 degrees to east of True North. There are no significant obstructions in the area that would force special aircraft operating procedures to be used. The altitude level of the runway is 455 m (approximately 1540 ft). Based on meteorological data supplied in MTEMPS Chart 1 of the Biophysical Setting section of the Environmental Impact Statement (EIS), the modelling airport temperature is assumed to be 11°C. This corresponds to a July-August mean temperature to be expected during airport maximum activity time periods.

The airport is located approximately 305 km north-east of Yellowknife. This distance is less than 200 nm and falls into the aircraft Stage Length category of 1 (Stage 1 covers 0-500 nm flight distances.) The airport is located approximately 1020 km (551 nm) north of Edmonton. This distance falls into the aircraft Stage Length category of 2. As it is close to the boundary between Stage Length 1 and 2 of 500 nm, for the purpose of modelling, all departures have been assumed to be of Stage Length 1.

Aircraft Operating Procedures

The location of the airport is such that most flights will arrive from a southerly direction and depart in a southerly direction. The ramp area of the airport is located at the north end of the runway. Operationally, this makes the use of Runway 02 for arrivals and Runway 20 for departures the most convenient. Additionally, the location of the mine camp to the north west of the airport makes the use of Runway 02 for arrivals and Runway 20 for departures preferable for minimizing noise impact. As mentioned earlier, there are no significant obstructions which force the use of special aircraft operating procedures. It has been indicated that the use of Noise Abatement Procedures (NAP) at the airport would be supported by the mine operators. Therefore it has been assumed that for the preparation of the aircraft noise contours, the Runway 02 will be used for arrivals and Runway 20 will be used for departures. It is assumed that these preferential runway procedures will be used as wind conditions permit and that the maximum tailwind component to accepted will be 5 knots. Based on these assumptions and the wind rose data supplied, Runway 02 is available 77% of the time for landings and Runway 20 is available 81% of the time for departures. The actual wind rose calculations are provided in Appendix A.

For the purposes of the noise contour preparation, all departures are assumed to be straight-out and all arrivals are assumed to be straight-in (3° glideslope). Any circling will be to the east of the runway for noise abatement reasons. Close into the airport, these assumptions are consistent with information provided by the air carriers operating in the area and Transport Canada.

Day-Night Movement Distribution

For the purposes of preparing the aircraft NEF contours it has been assumed that all movements occur at night. The rationale for this is that the purpose of the contours is, in part, to determine aircraft noise impact on the worker housing. As the mine will be operating 24 hours per day, at any given time, there are likely to be workers sleeping. For NEF contours, night-time movements are effectively equal to 16.67 day-time movements; a 12.2 dB penalty. No penalty for night-time movements is applied to the Leq contours.

Aircraft Movement Input Data Sets

For all of the NEF and Leq contour plots, the same basic input data is used for aircraft movements. The major difference between the two data sets is that the NEF uses Peak Planning Day movements while the Leq data uses Average Day movements. The remaining differences consist only of scaling and calculation area variances. The input data are summarized in the spreadsheets attached as Appendix B.

NEF Plots

The NEF plots attached show the NEF 25, 30, 35 and 40 contours plotted to a scale of 1:150,000, 1:50,000 and 1:15,000. A sample input data set is attached as Appendix C. Only the 1:15,000 contours have been overlaid on background maps as suitable maps at other scales were not available when this report was completed. On the NEF contour plots, North is to the top right-hand corner. That is, aircraft movements left to right are operating on Runway 02 and aircraft movements right to left are operating on Runway 20.

Leq Plots

The Leq plots attached show the Leq 45 through 65 dBA contours at 1:50,000 and 1:15,000 scales. These plots were generated using the FAA Integrated Noise Model. For the 1:15,000 scale contour both a traced contour over a map and the raw INM Program output contour are provided. On the Leq contour plots, North is to the top right-hand corner. That is, aircraft movements left to right are operating on Runway 02 and aircraft movements right to left are operating on Runway 20. One of the INM Program input data sets is provided in Appendix D.

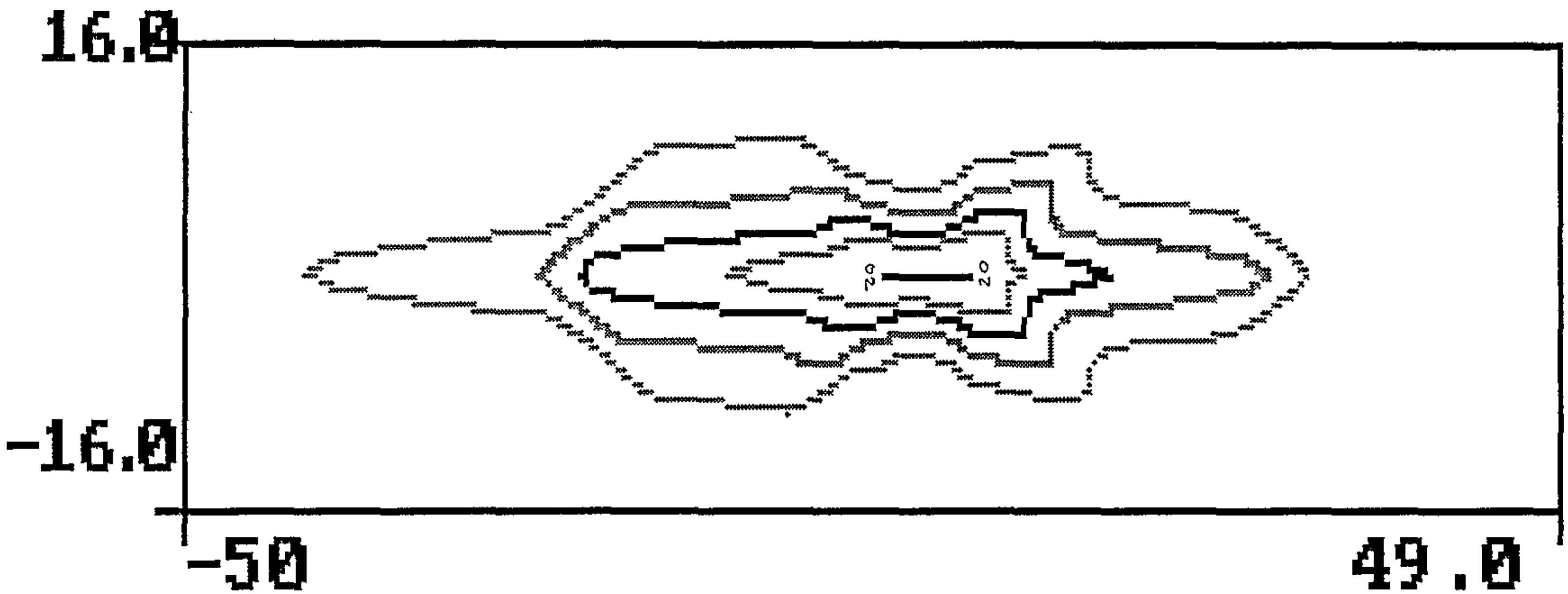
SEL Plots

Sound Exposure Level (SEL) plots for all the aircraft types have been generated using the FAA Integrated Noise Model. These plots show the SEL 80, 90 and 100 dBA contours for departures and arrivals. Both departures and arrivals operate in a left to right direction on these plots. An additional plot has been provided showing a 727 Stage 2 departure. This shows the effects of the additional weight required for the longer flight. Scales for all the SEL contour plots are 1:50,000. A sample input INM Program input data set is attached as Appendix E.

NEF, Leq and SEL

Noise Contour Plots

NWT DIAMONDS AIRPORT NEF - SCEN 1 - R2

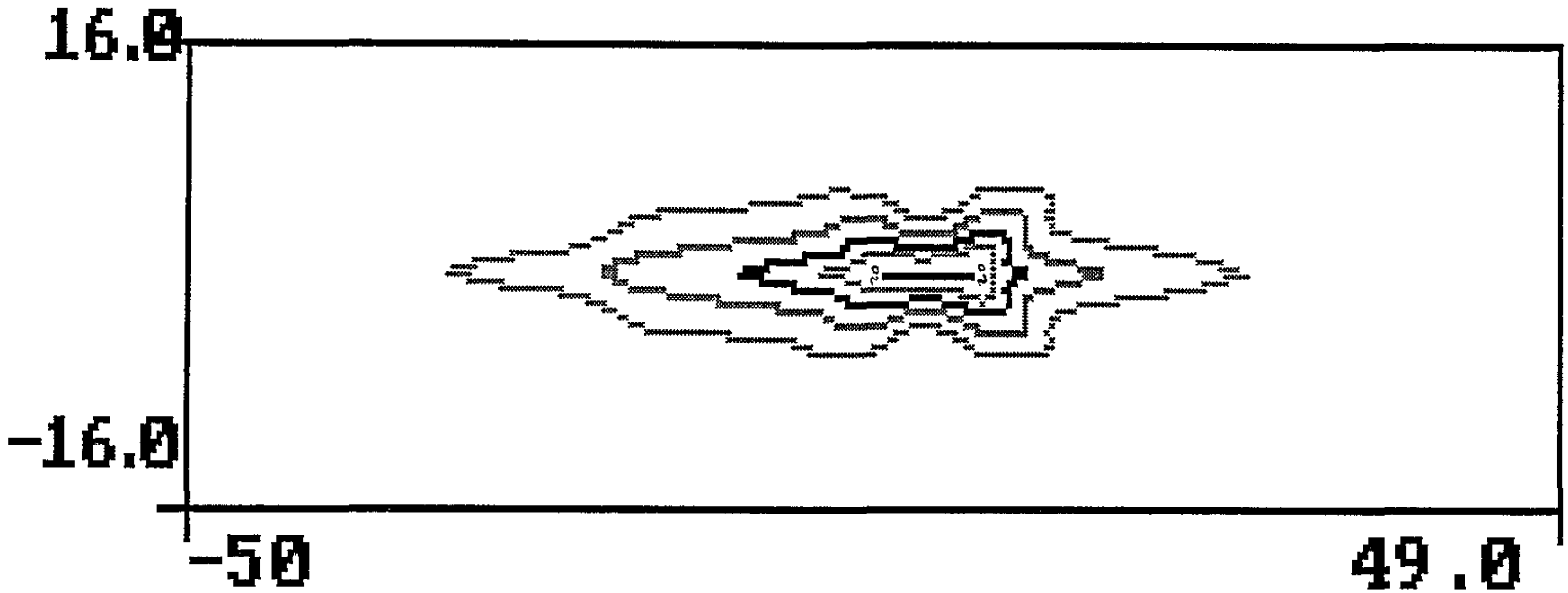


Scale: 1:150,000

NEF Contours: 25, 30, 35, 40

Scenario 1: B727 Jets

NWT DIAMONDS AIRPORT NEF - SCEN 2 - R2

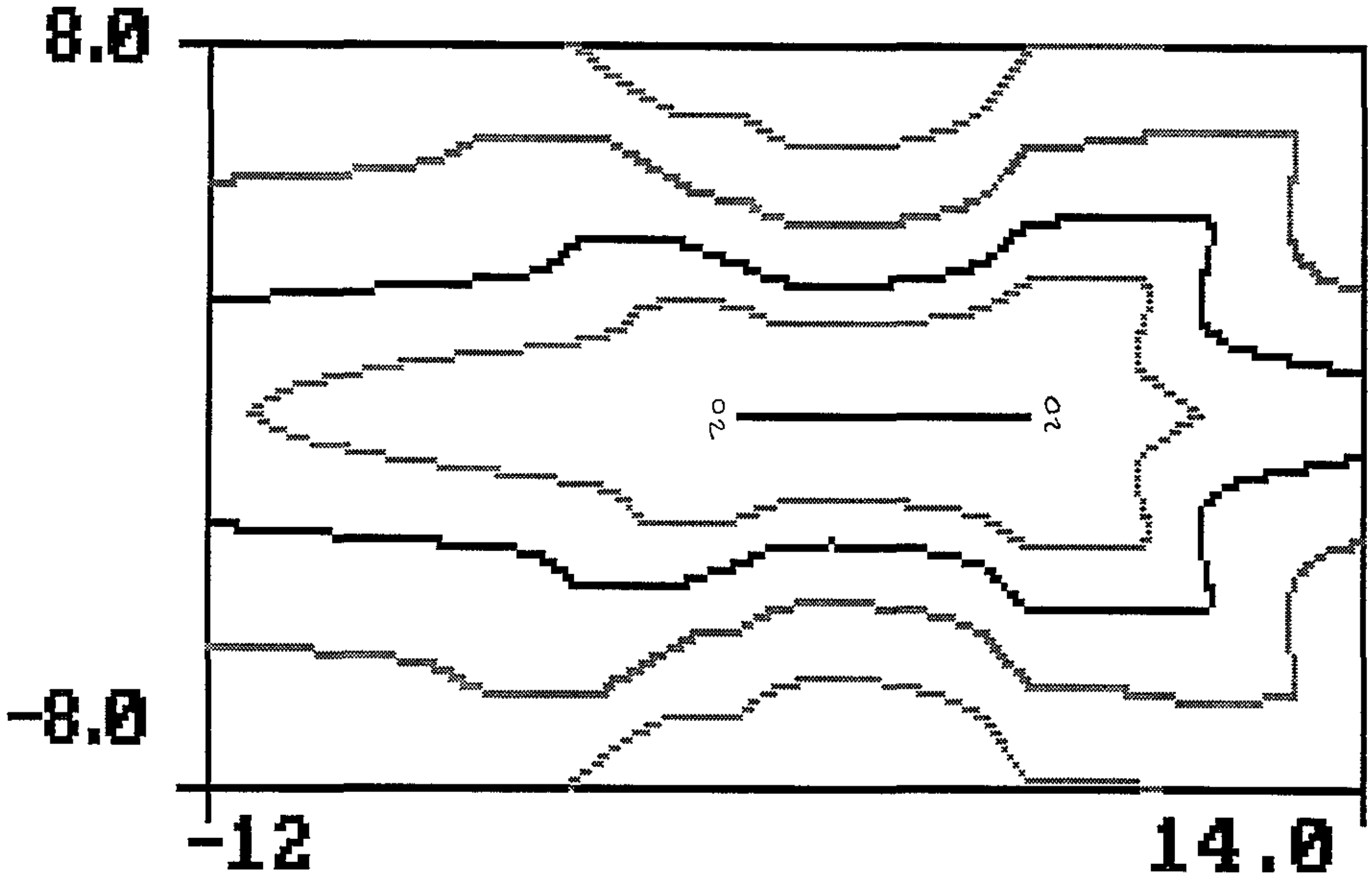


Scale: 1:150,000

NEF Contours: 25, 30, 35, 40

Scenario 2: B737 Jets

NWT DIAMONDS AIRPORT NEF - SCEN 1-R2

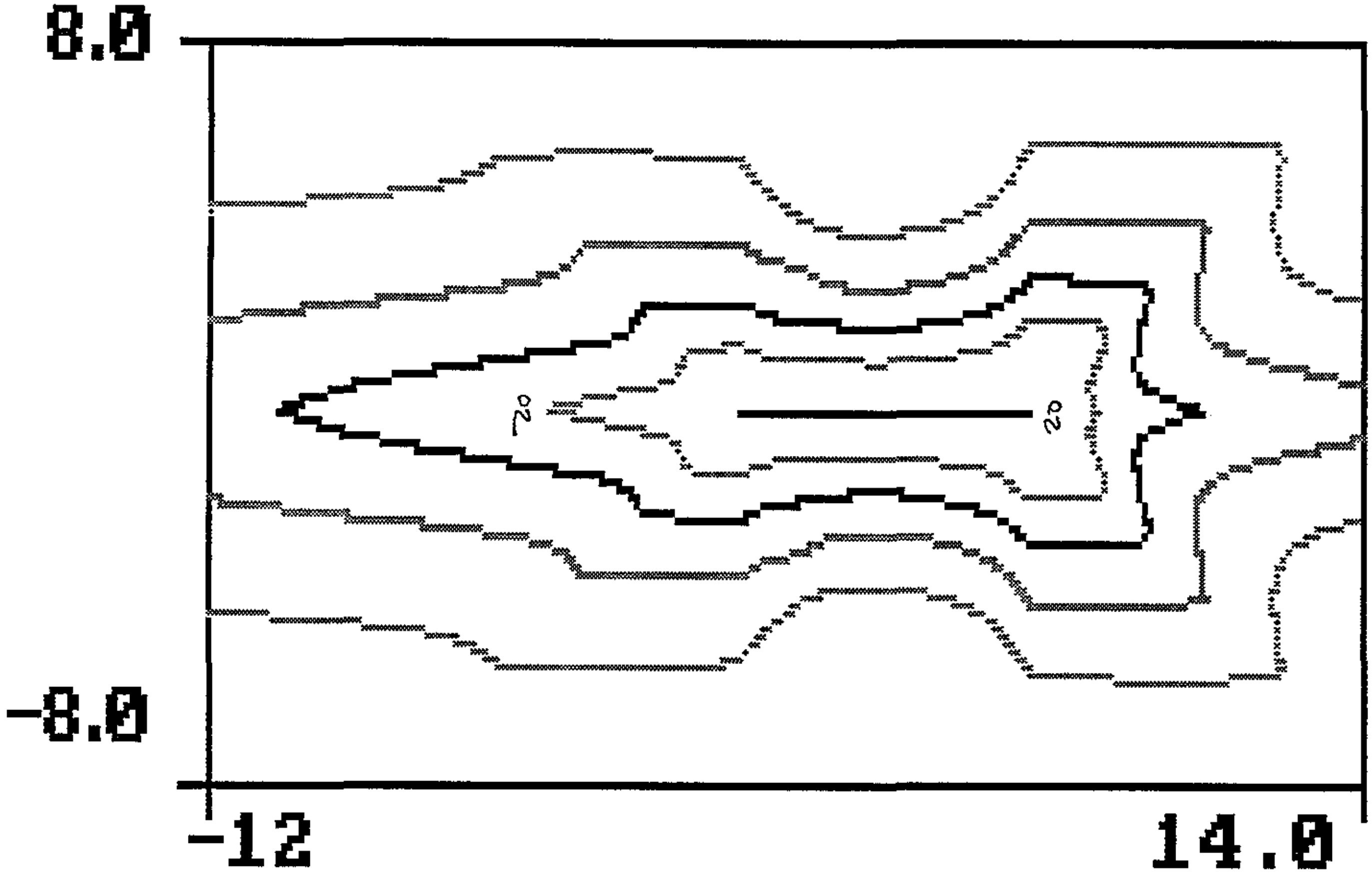


Scale: 1:50,000

NEF Contours: 25, 30, 35, 40

Scenario 1: B727 Jets

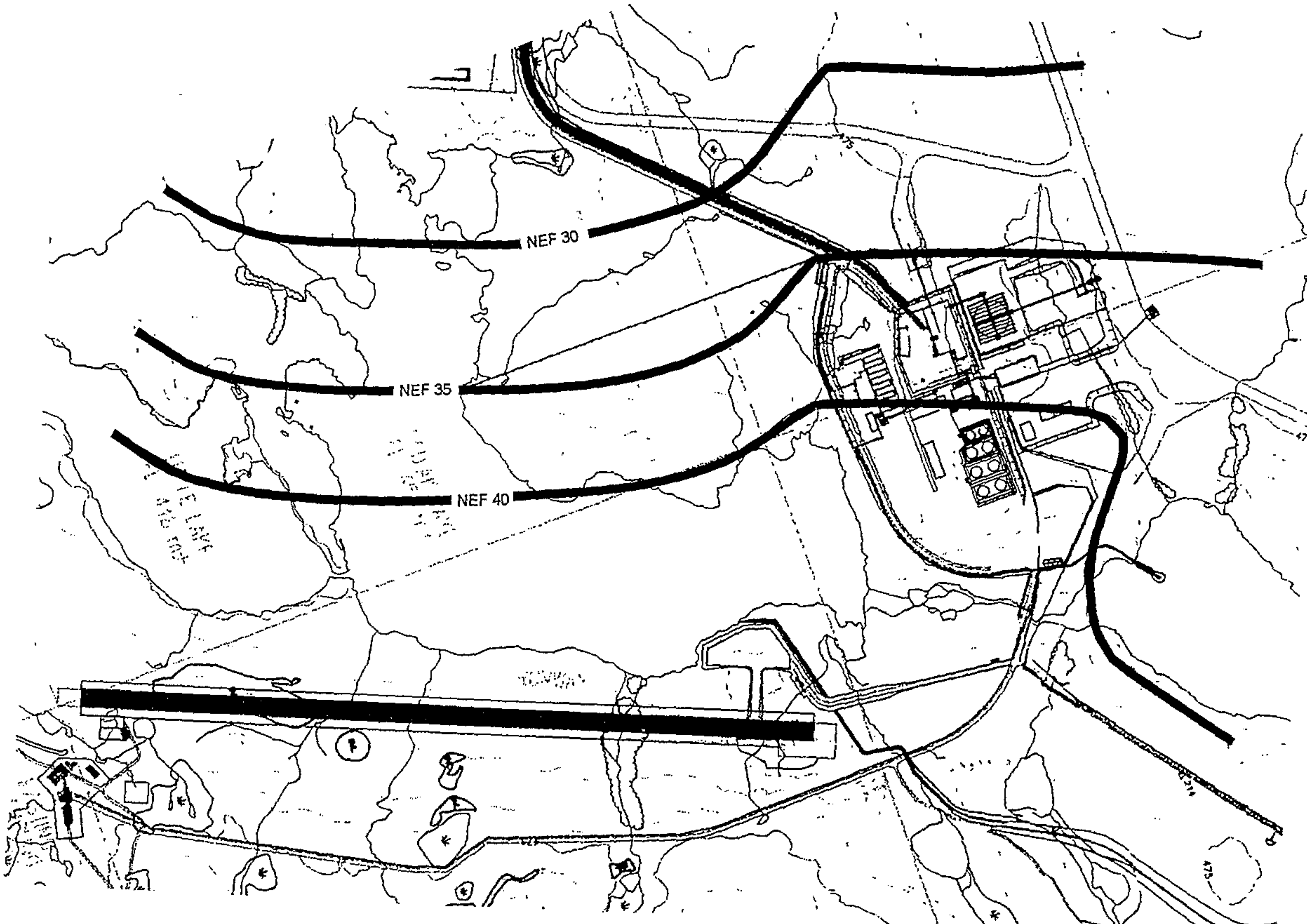
NWT DIAMONDS AIRPORT NEF - SCEN 2-R2



Scale: 1:50,000

NEF Contours: 25, 30, 35, 40

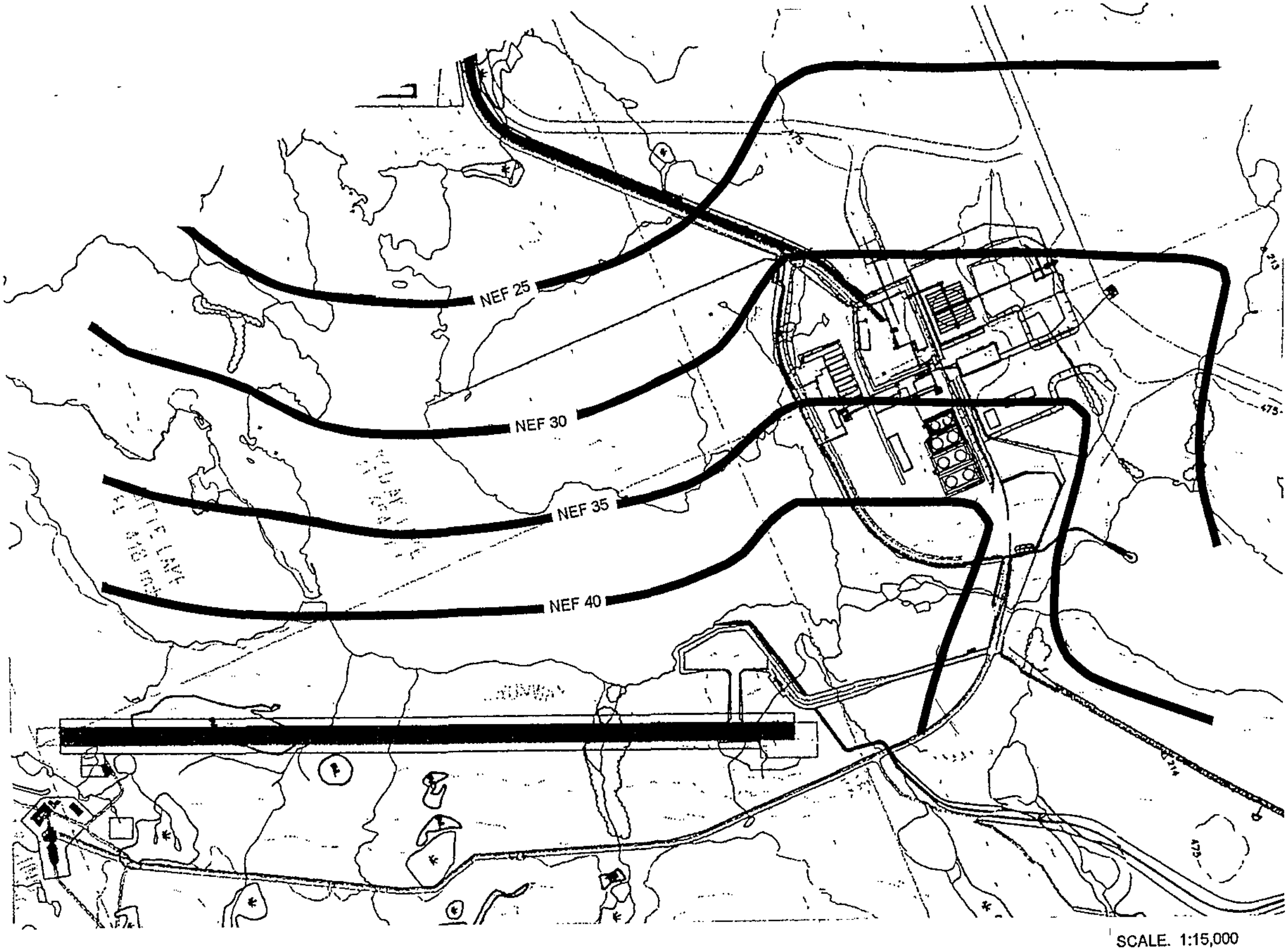
Scenario 2: B737 Jets



NWT Diamonds Project Airport
Noise Exposure Forecast (NEF) Contour

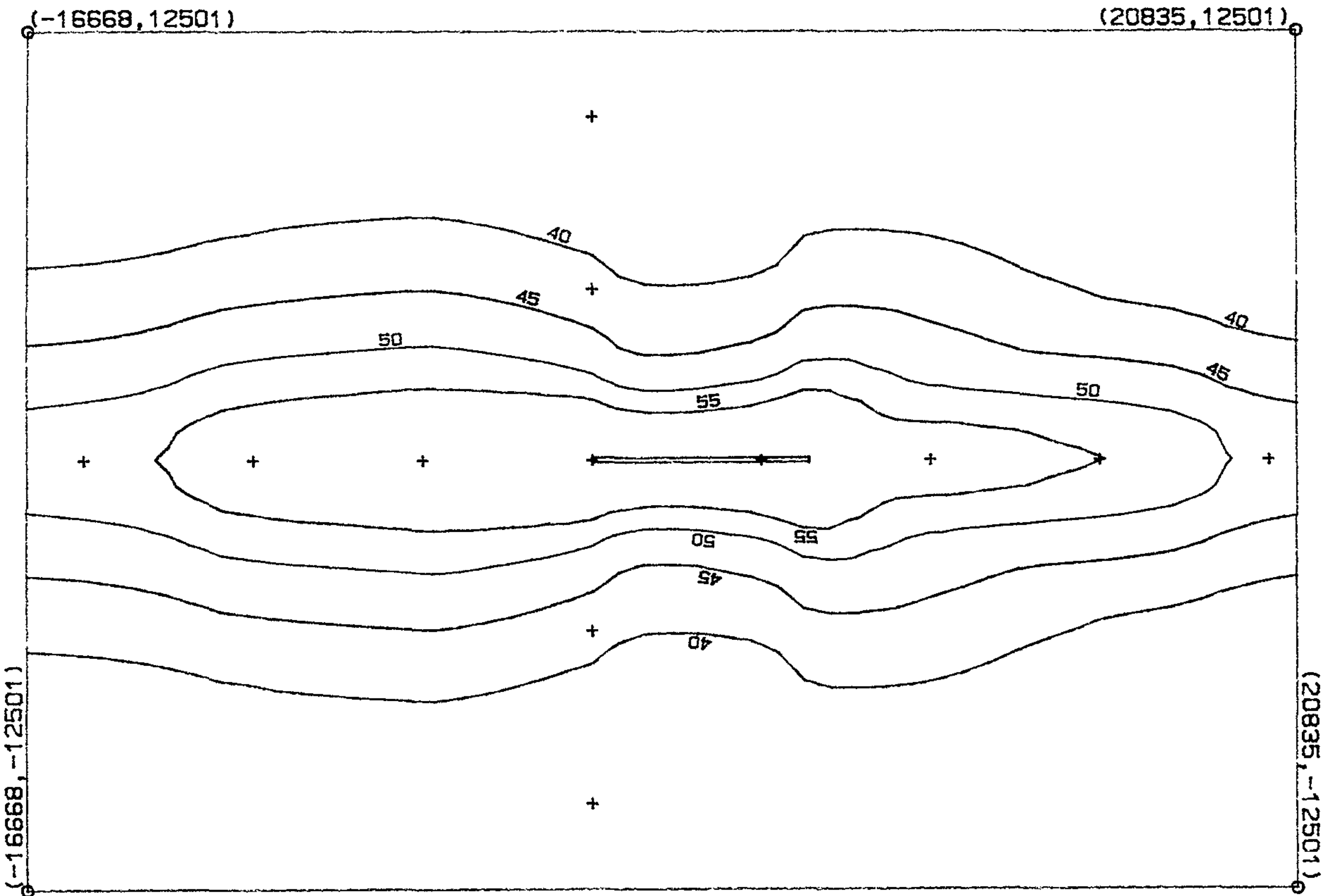
SCALE. 1:15,000

Scenario 1 - 727 Cargo Jets



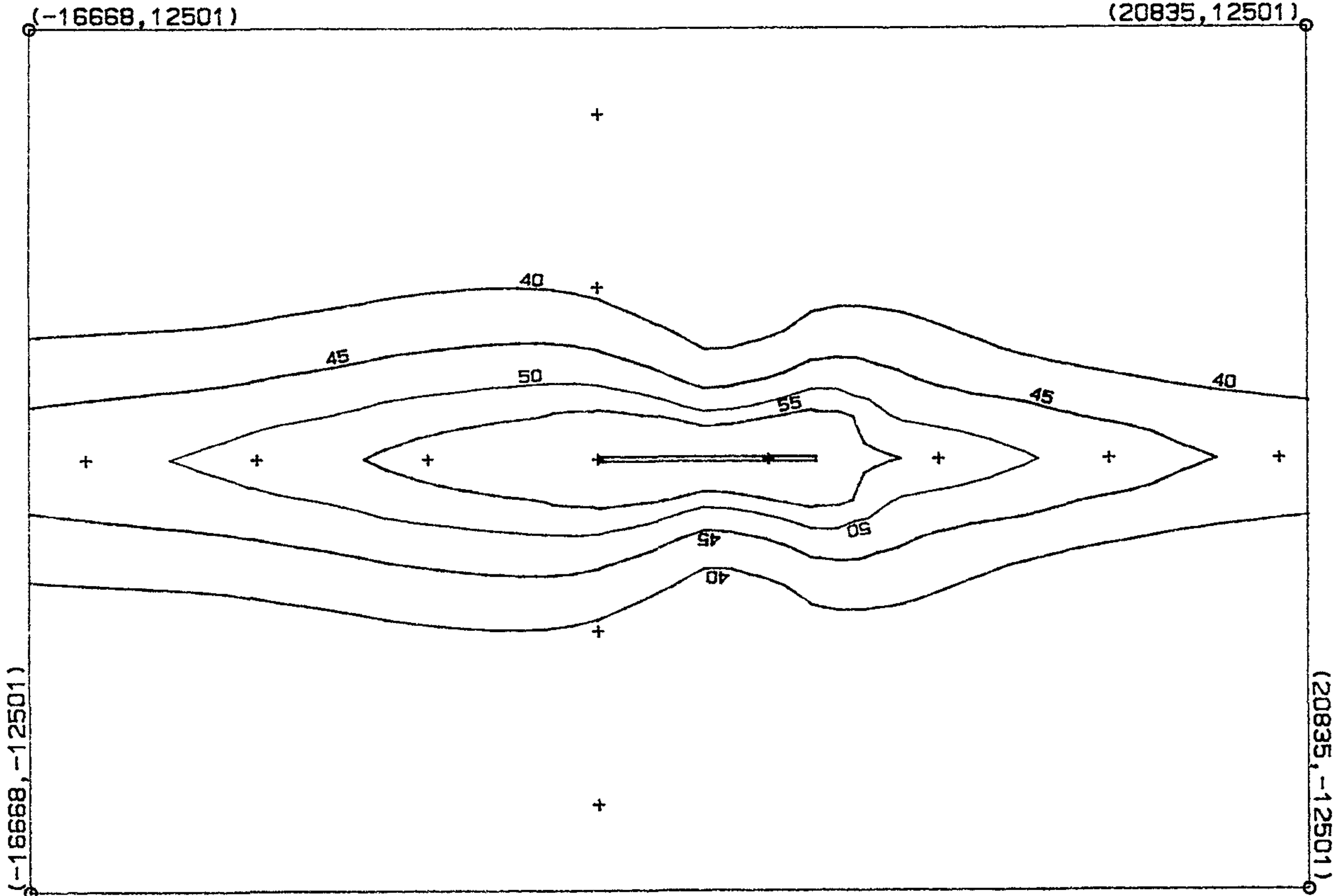
NWT Diamonds Project Airport
Noise Exposure Forecast (NEF) Contour

Scenario 2 - 737 Cargo Jets



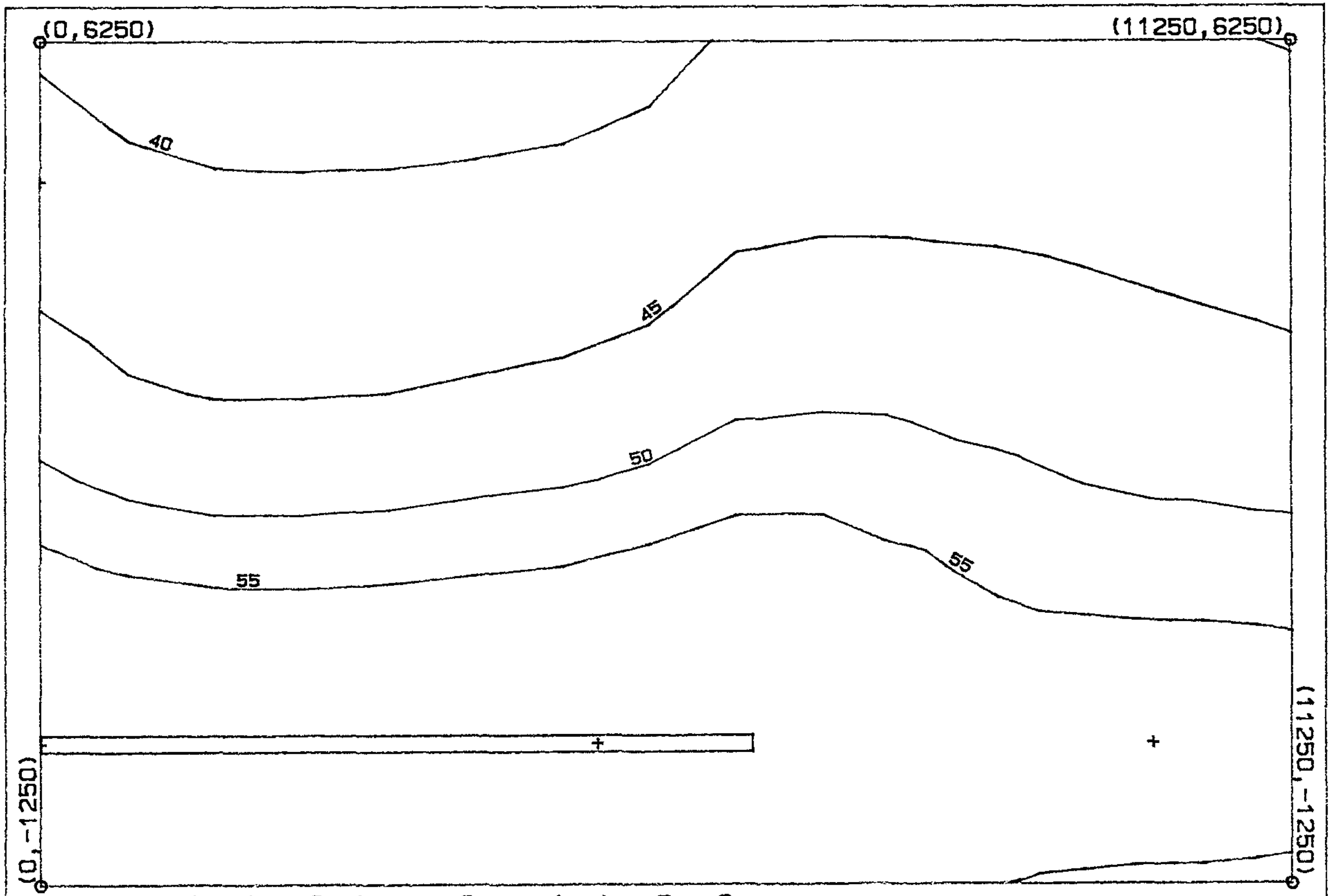
Aircraft Noise Leq Contour - Scenario 1 - Rev 2
BHP Diamonds Mine Airport
METRIC = LEQ 40.0 45.0 50.0 55.0
AREA(SQ MI) = 30.1 14.1 6.3 2.9

4167 ft

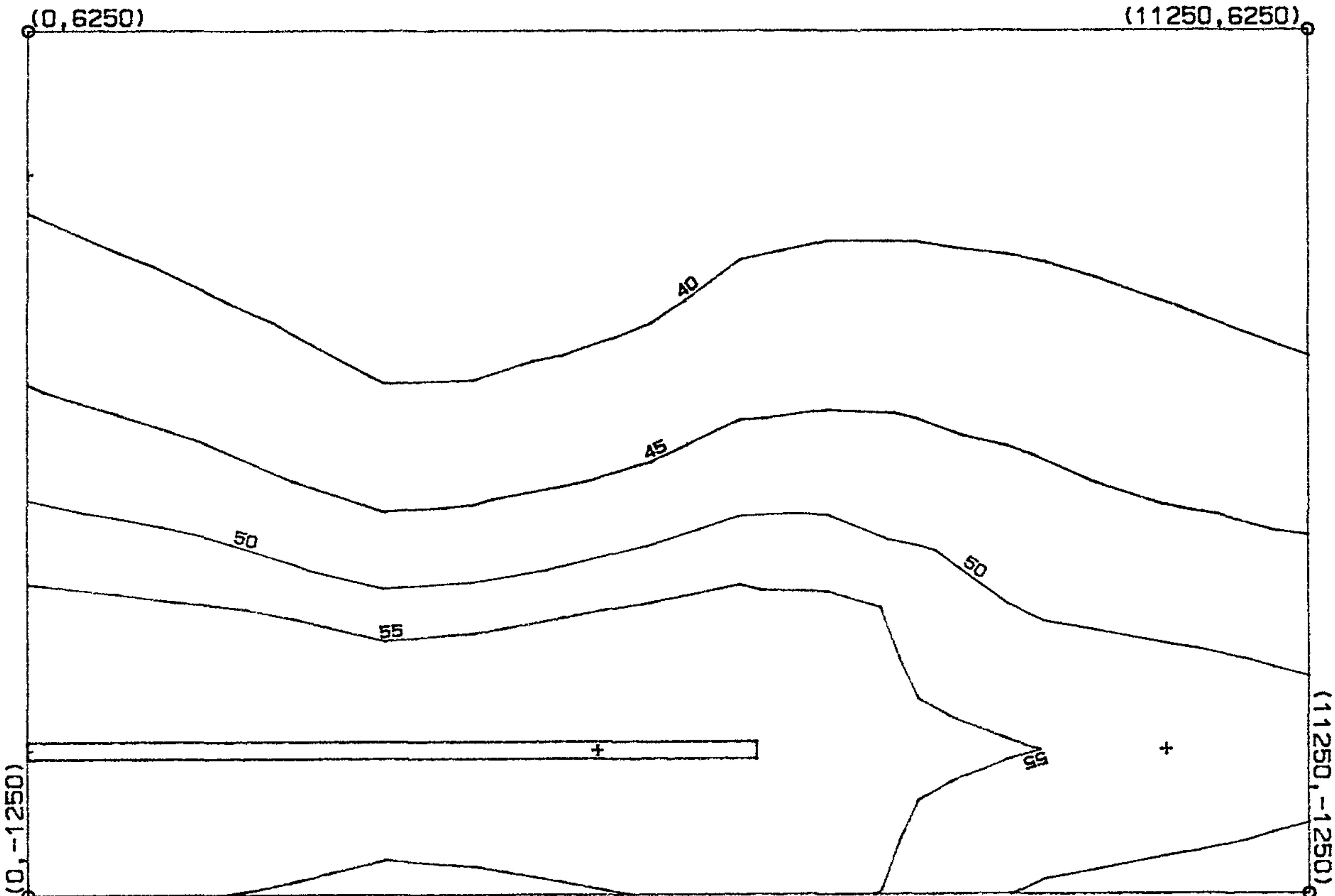


Aircraft Noise Leq Contour - Scenario 2 - Rev 2
BHP Diamonds Mine Airport
METRIC = LEQ 40.0 45.0 50.0 55.0
AREA(SQ MI) = 13.8 6.0 2.6 1.1

4167 ft



Aircraft Noise Leq Contour - Scenario 1 - Rev 2
BHP Diamonds Mine Airport
METRIC = LEQ 40.0 45.0 50.0 55.0
AREA(SQ MI) = 30.1 14.1 6.3 2.9



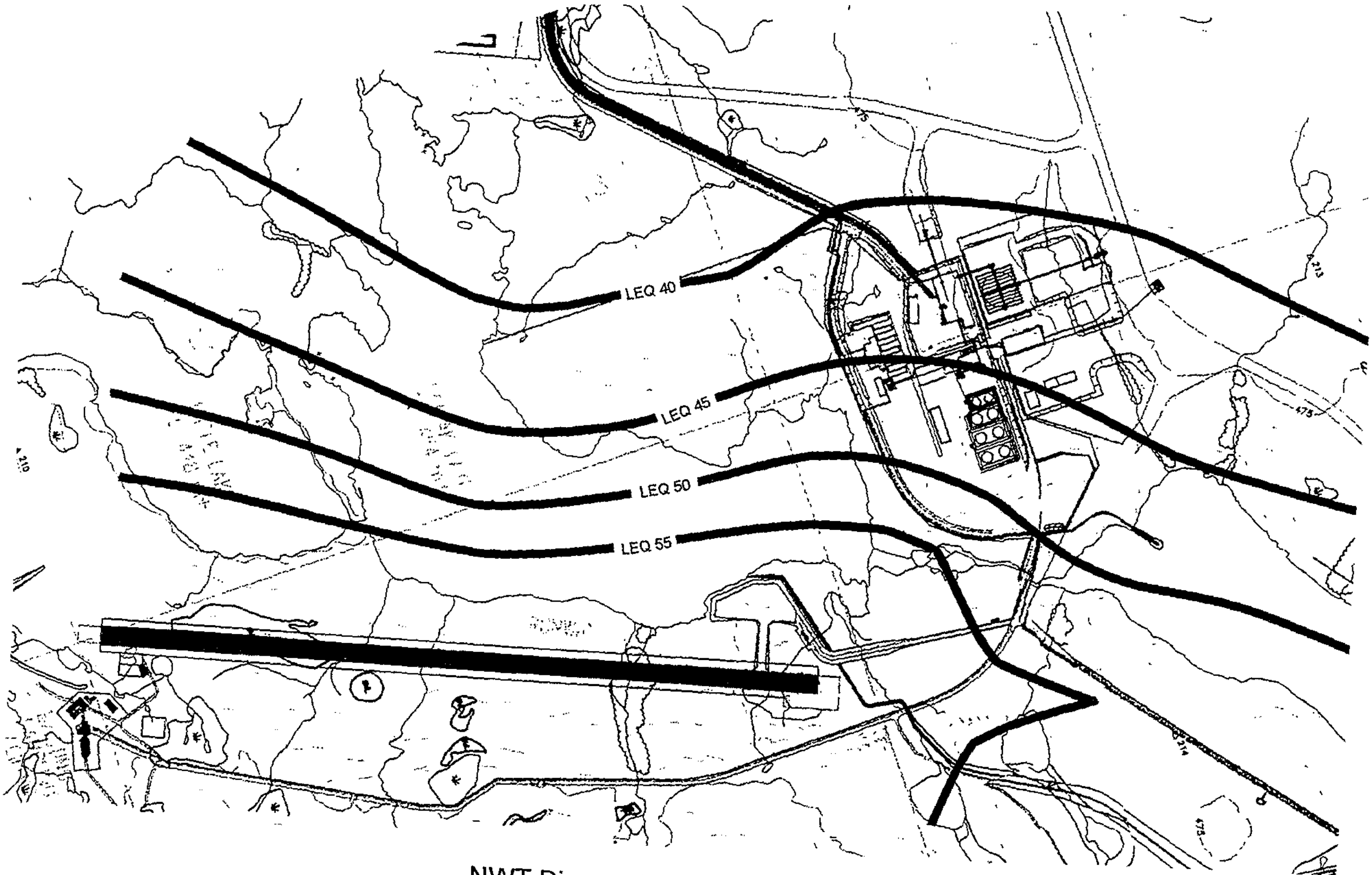
Aircraft Noise Leq Contour - Scenario 2 - Rev 2
BHP Diamonds Mine Airport
METRIC = LEQ 40.0 45.0 50.0 55.0
AREA(SQ MI) = 13.8 6.0 2.6 1.1

1250 ft

NWT Diamonds Project Airport
Equivalent Sound Energy (Leq) Contour

SCALE. 1:15,000

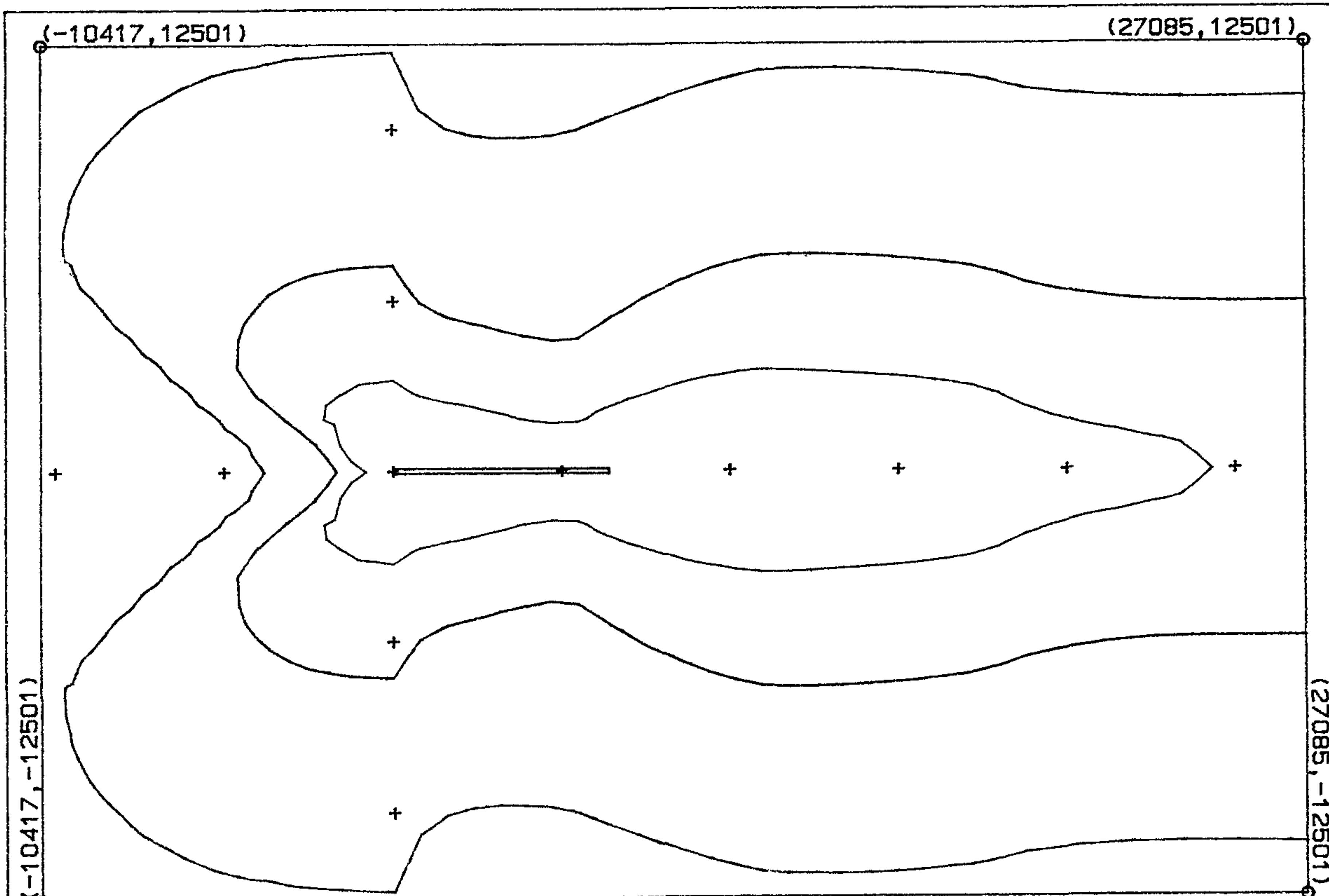
Scenario 1 - 727 Cargo Jets



NWT Diamonds Project Airport
Equivalent Sound Energy (Leq) Contour

SCALE. 1:15,000

Scenario 2 - 737 Cargo Jets



Stage 1 B727-200/JT8D-17 SEL Contour

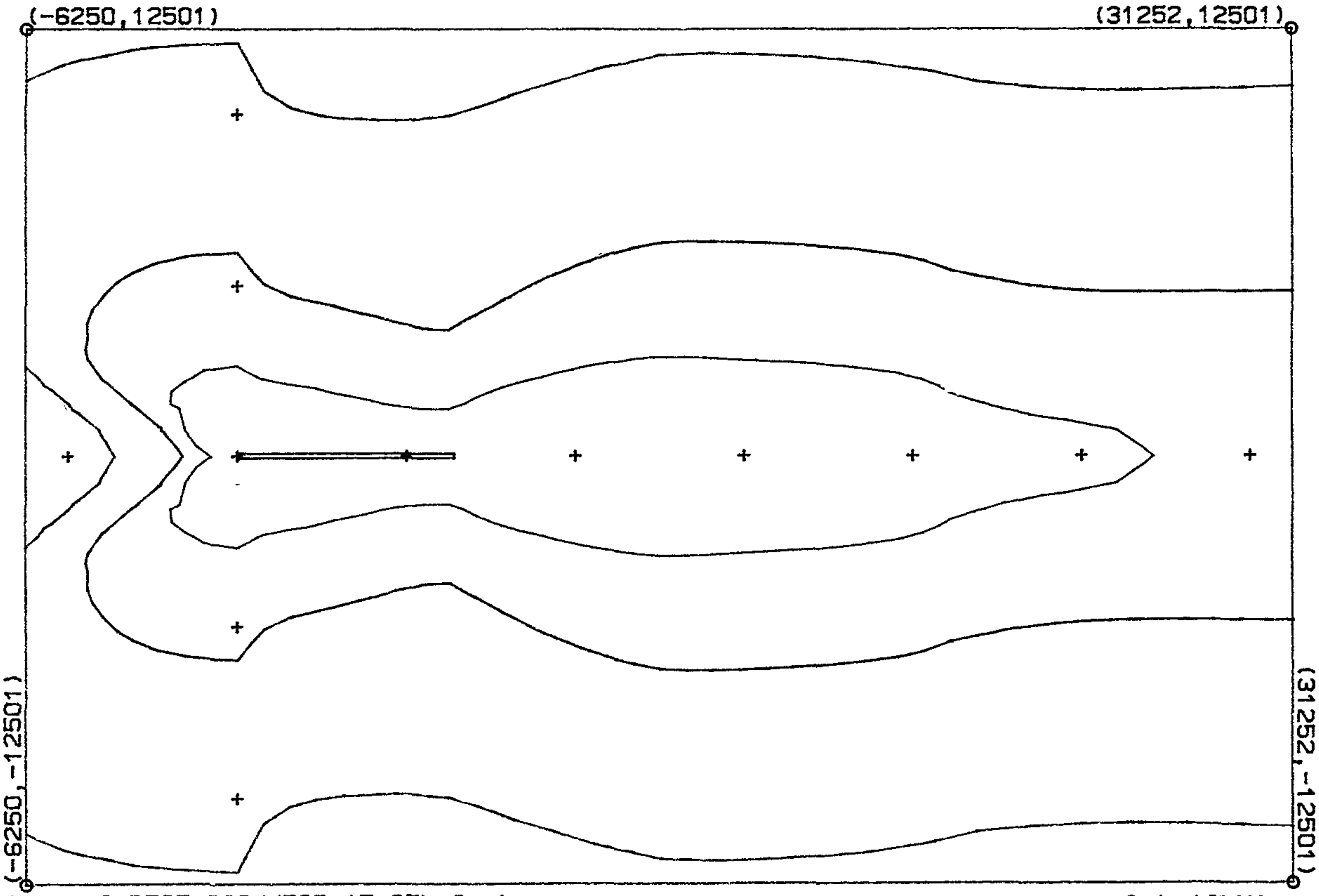
Departure Sound Exposure Levels (SEL)

Contours: 80.0 90 0 100.0 dBA

AREA(SQ MI) = 45.0 18.2 3.9

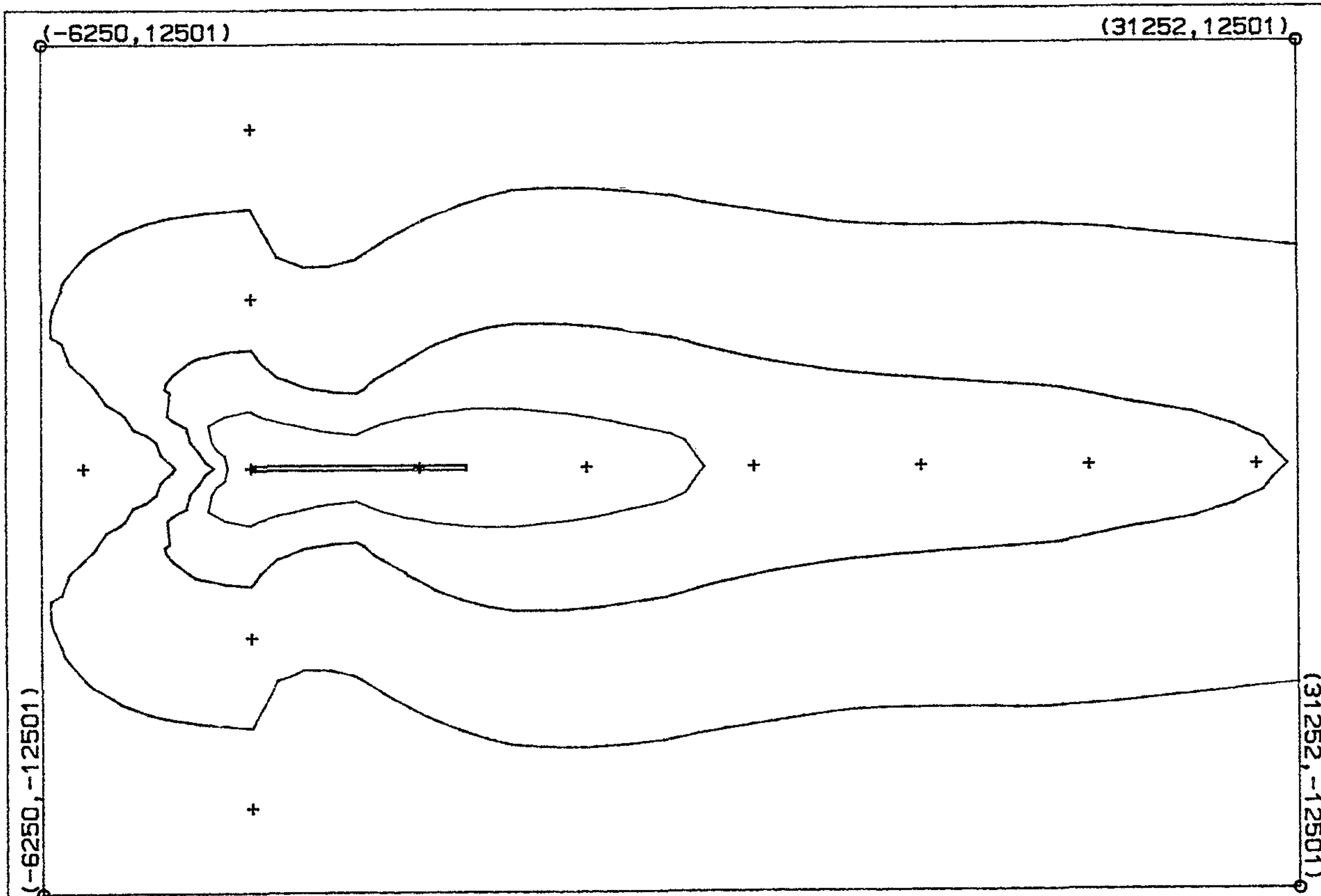
Scale: 1:50,000

4167 ft



Stage 2 B727-200/JT8D-17 SEL Contour
Departure Sound Exposure Levels (SEL)
Contours: 80 0 90.0 100.0 dBA
AREA(SQ MI) = 44.9 18.7 4.2

Scale: 1:50,000
4167 ft



Stage 1 B737/JT8D-7 SEL Contour

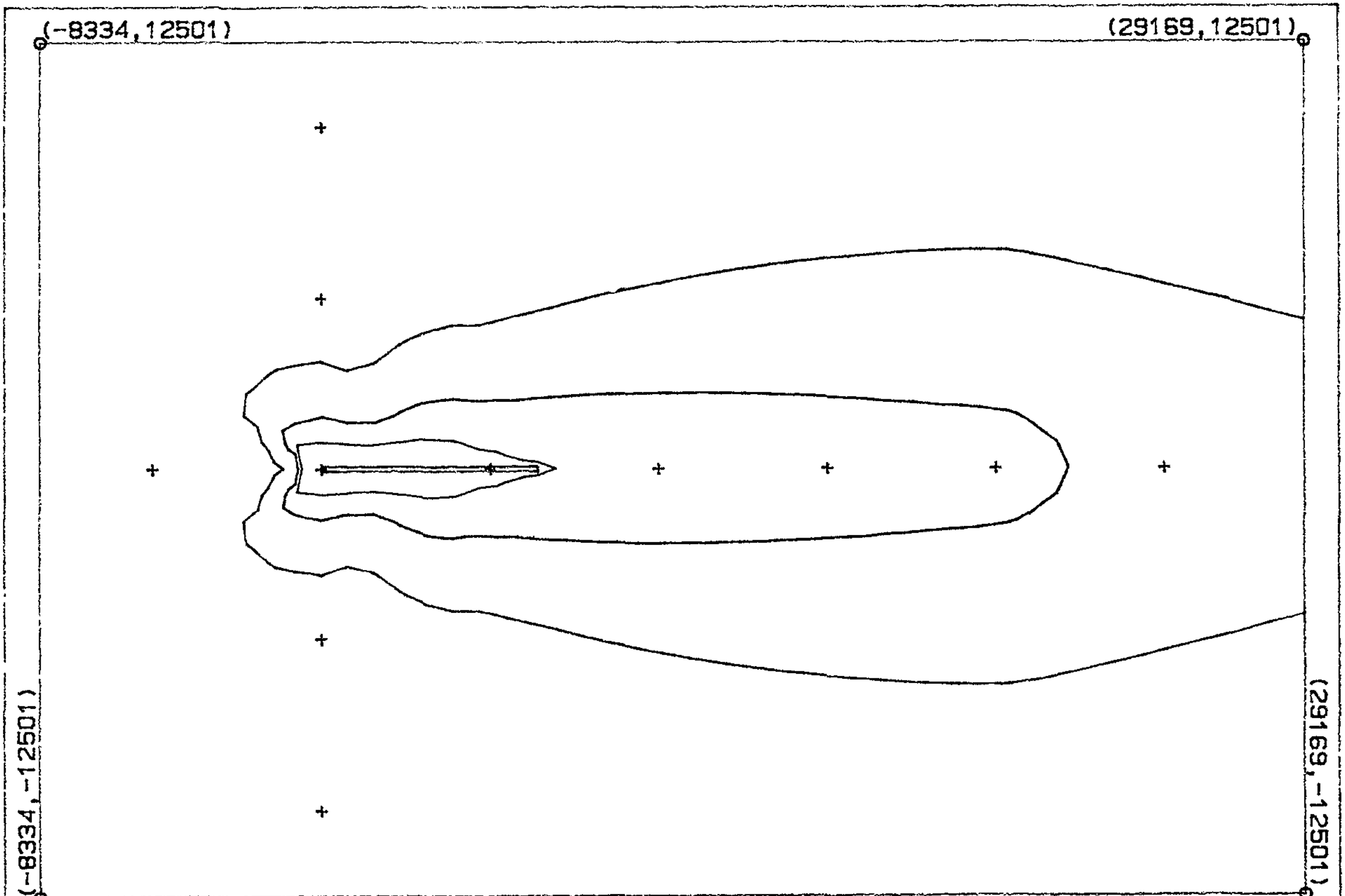
Departure Sound Exposure Levels (SEL)

Contours: 80.0 90.0 100 0 dBA

AREA(SQ MI) = 26.7 6.7 1.4

Scale: 1:50,000

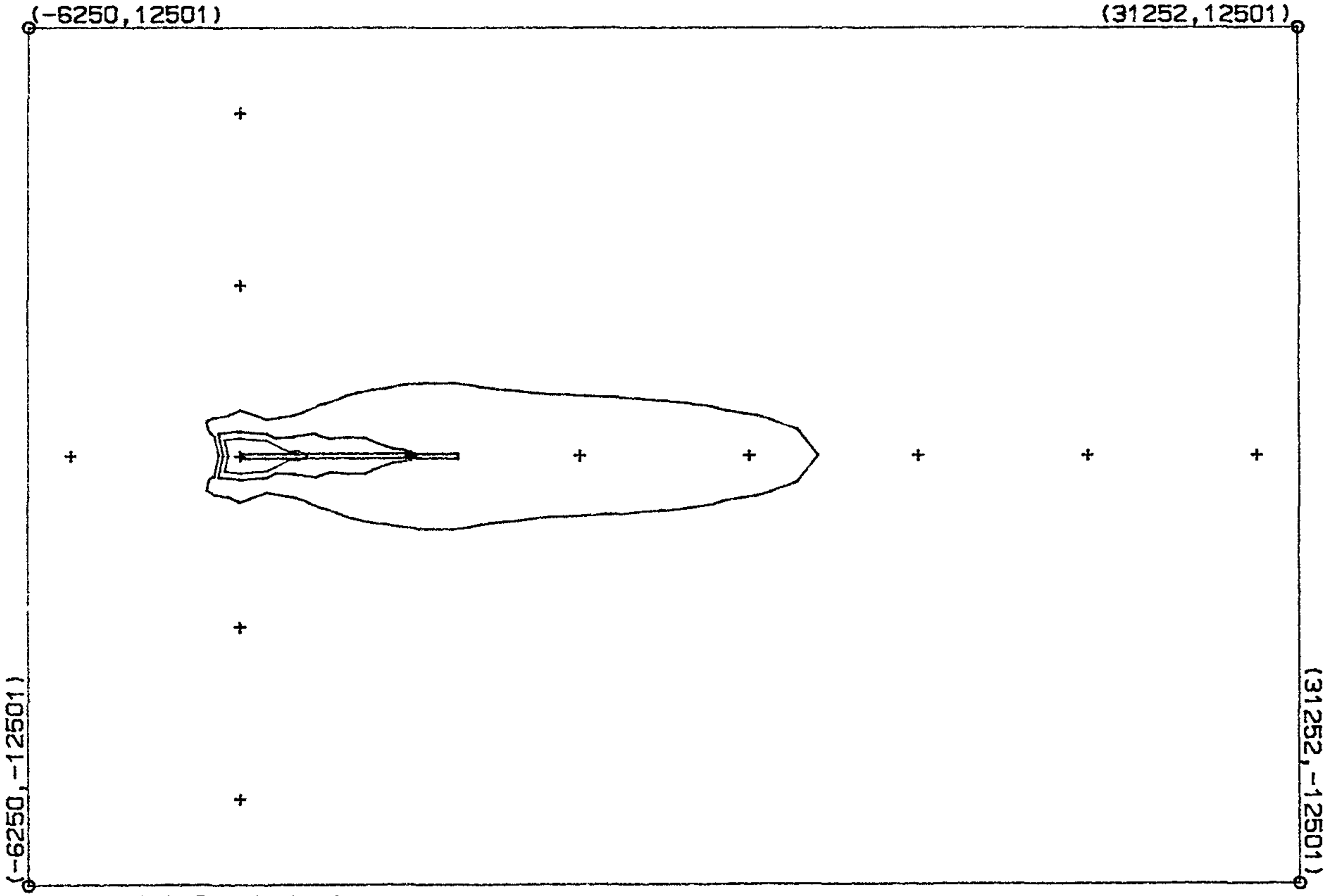
4167 ft



Stage 1 DC3/R1820-86 SEL Contour
Departure Sound Exposure Levels (SEL)
Contours: 80.0 90.0 100 0 dBA
AREA (SQ MI) = 16.2 3.1 .3

SCALE. 1:50,000

4167 ft



Stage 1 DHC-6 SEL Contour

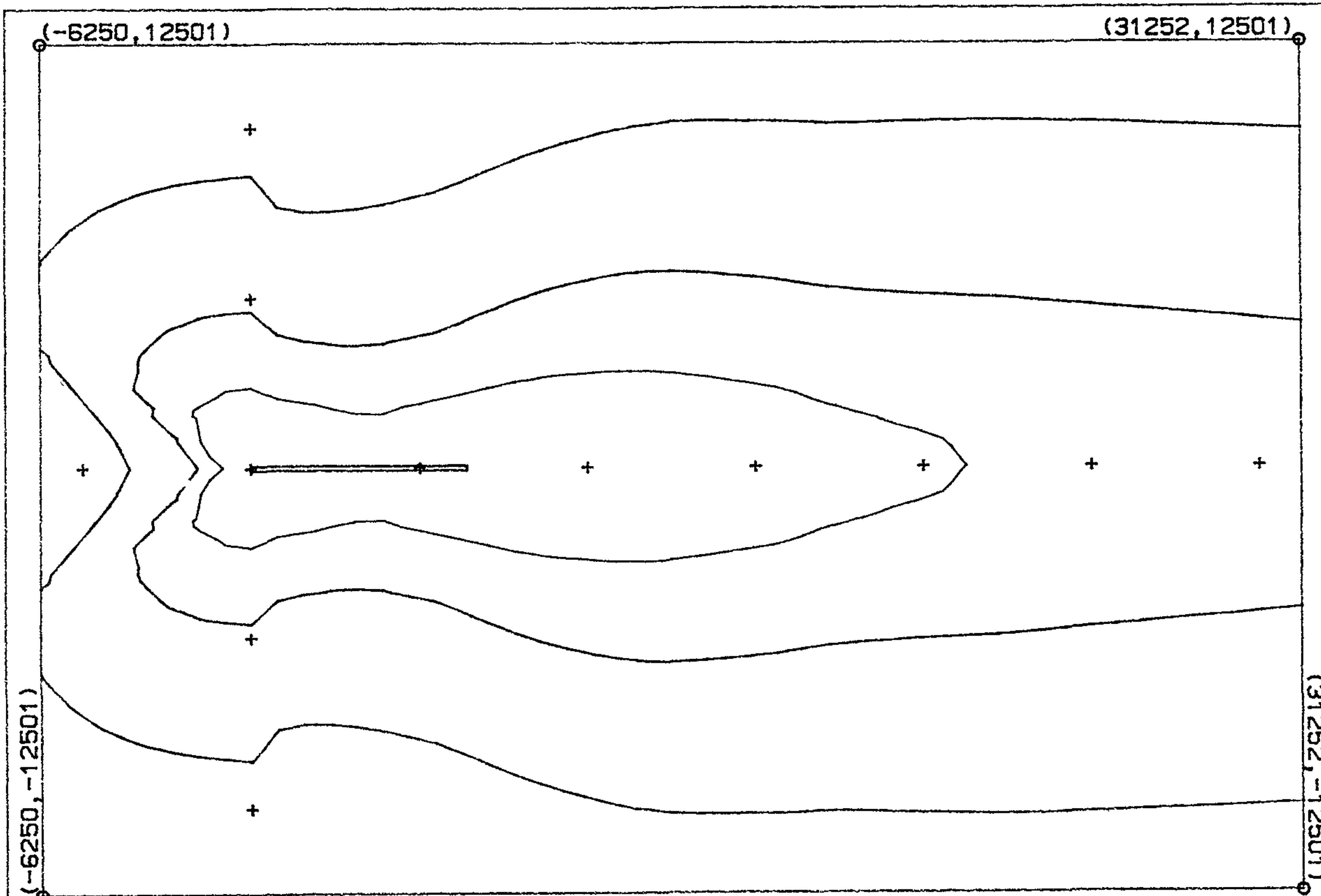
Departure Sound Exposure Levels (SEL)

Contours: 80.0 90 0 100 0 dBA

AREA(SQ MI) = 2.0 .2 .0

Scale: 1:50,000

4167 ft



Stage 1 Gulfstream IIB SEL Contour

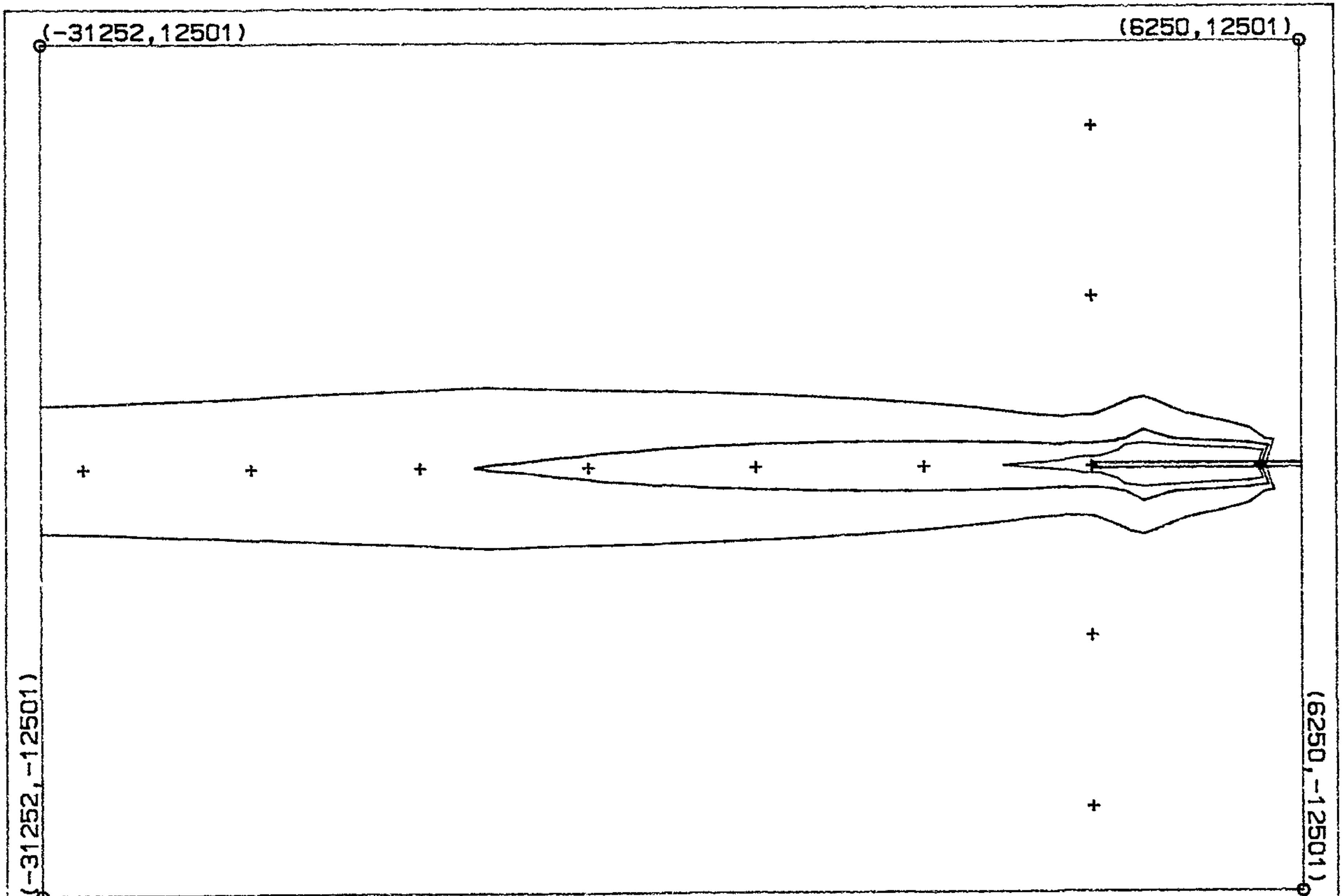
Departure Sound Exposure Levels (SEL)

Contours: 80.0 90 0 100 0 dBA

AREA(SQ MI) = 37.4 15.8 3.3

Scale: 1:50,000

4167 ft



Stage 1 B727-200/JT8D-17 SEL Contour

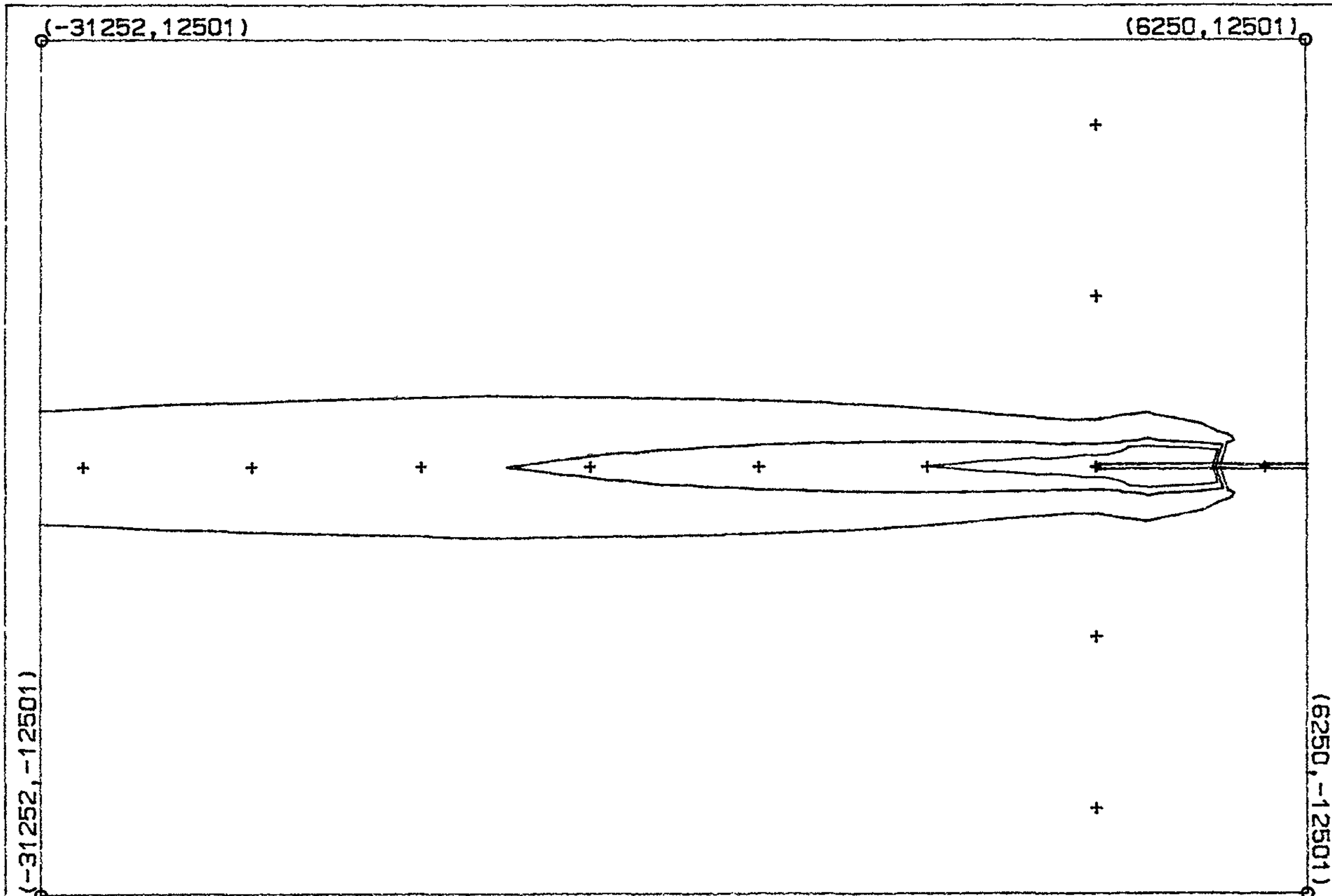
Arrival Sound Exposure Levels (SEL)

Contours: 80 0 90.0 100 0 dBA

AREA(SQ MI) = 6.8 1.0 .2

Scale: 1:50,000

4167 ft



Stage 1 B737/JT8D-7 SEL Contour

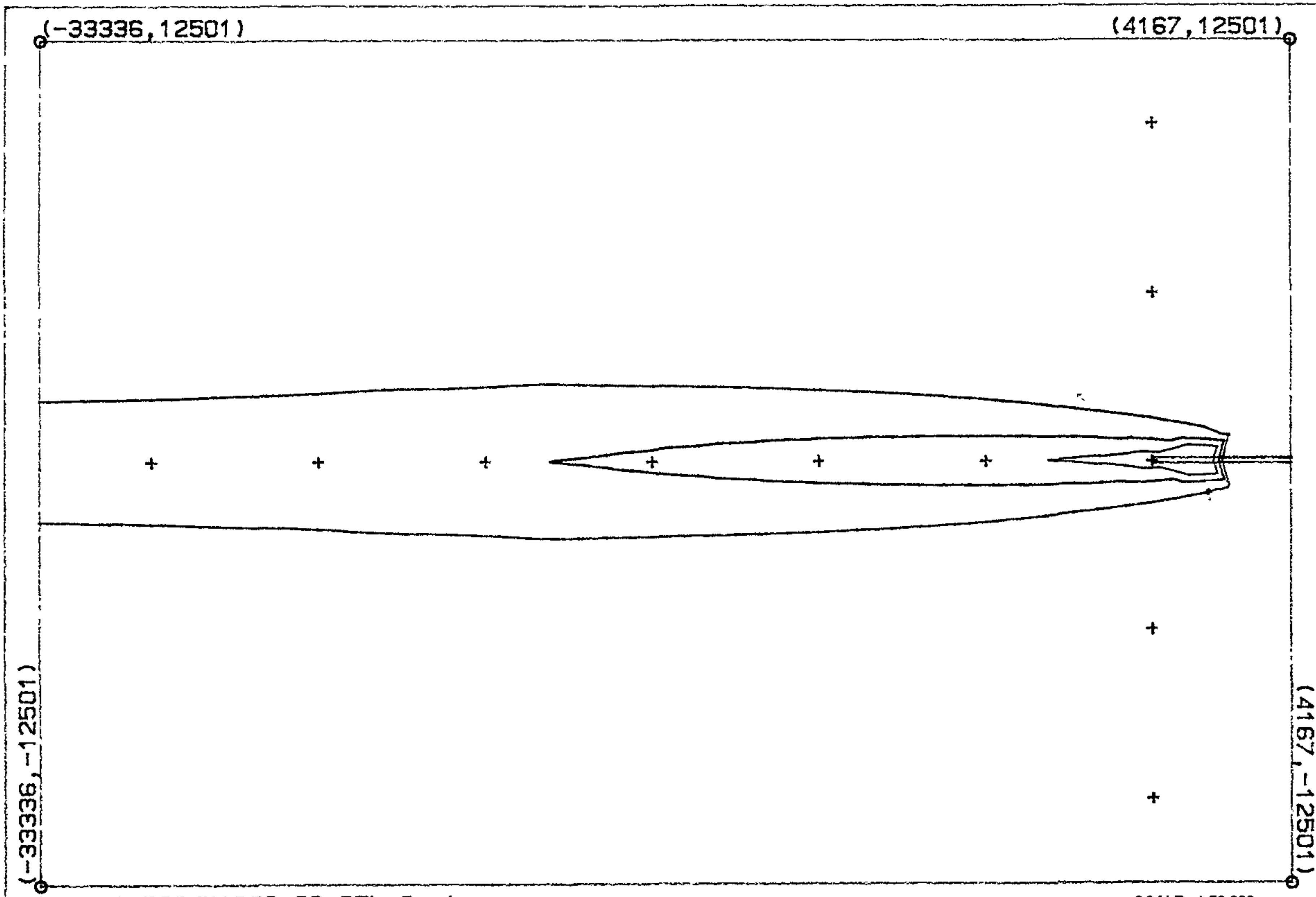
Arrival Sound Exposure Levels (SEL)

Contours: 80 0 90 0 100.0 dBA

AREA (SQ MI) = 5.7 .9 .1

Scale: 1:50,000

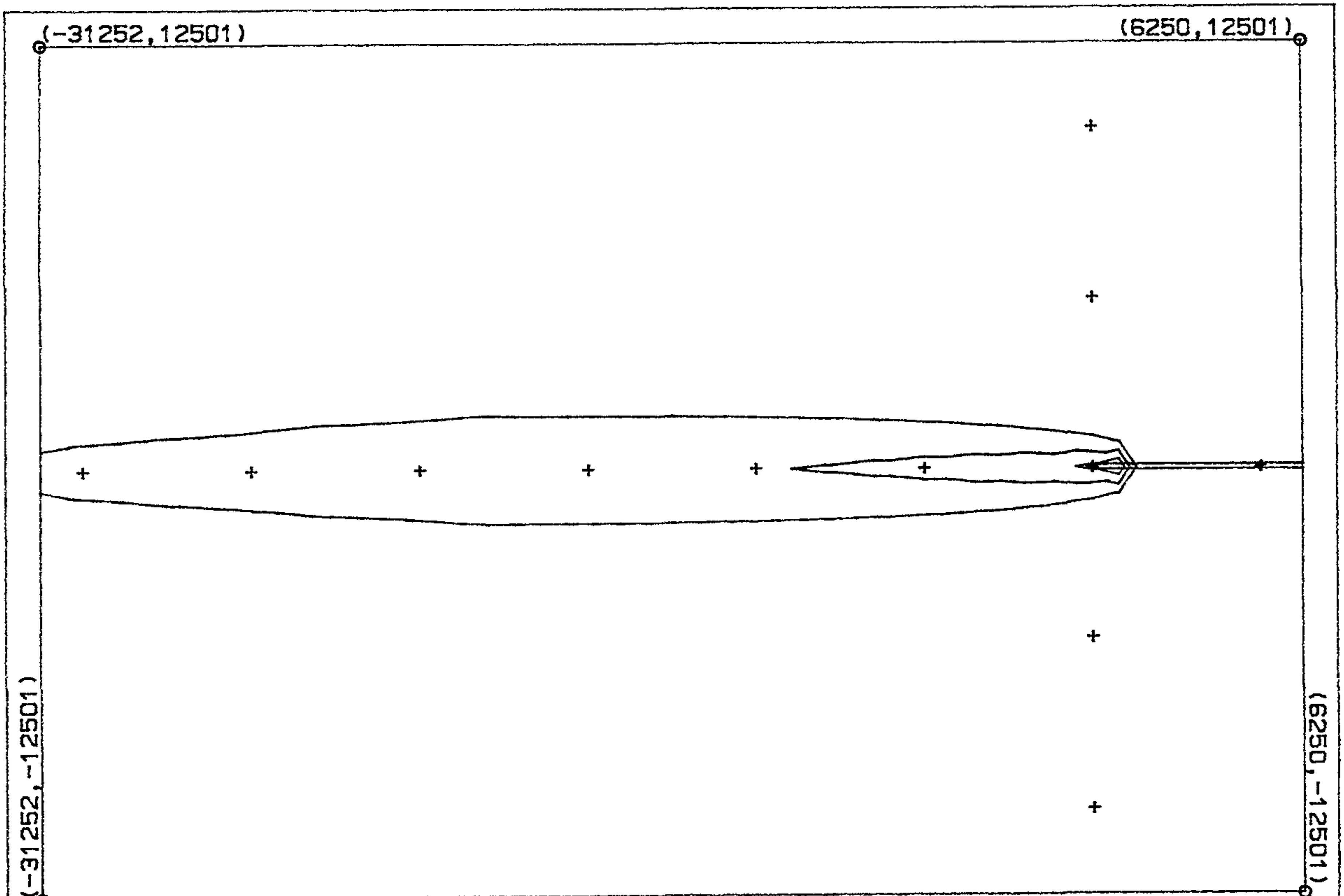
4167 ft



Stage 1 DC3/R1820-86 SEL Contour
Arrival Sound Exposure Levels (SEL)
Contours: 80.0 90.0 100 0 dBA
AREA(SQ MI) = 6.5 .8 .0

SCALE. 1:50,000

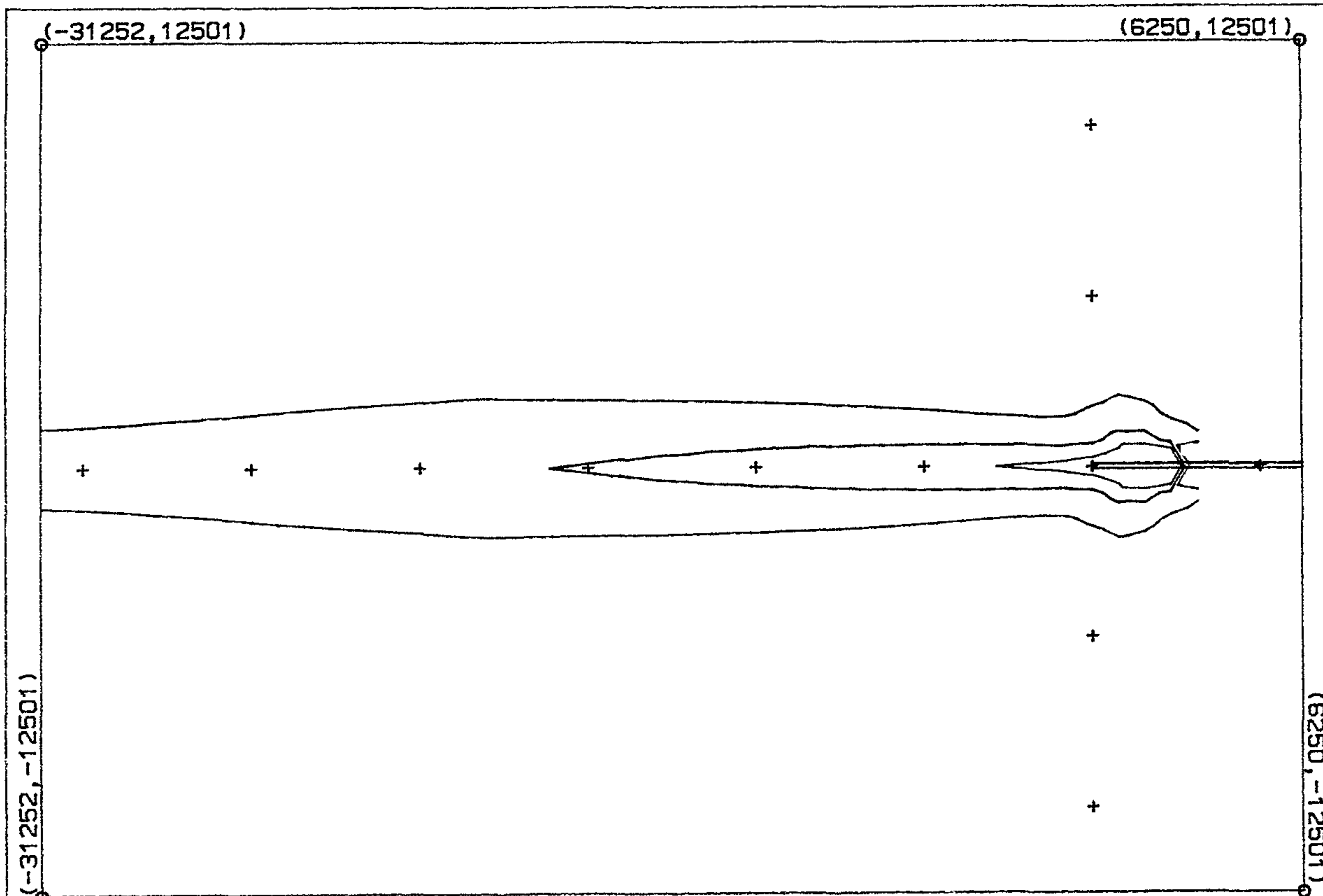
4167 ft



Stage 1 DHC-6 SEL Contour
Arrival Sound Exposure Levels (SEL)
Contours: 80 0 90 0 100.0 dBA
AREA(SQ MI) = 3.1 .2 .0

Scale: 1:50,000

4167 ft



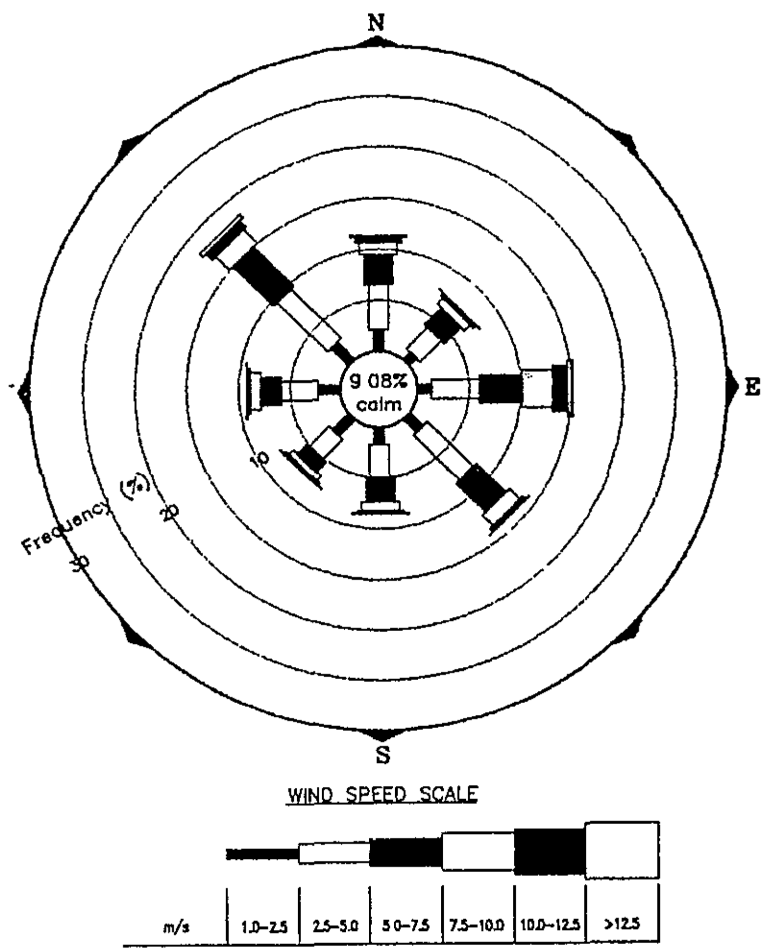
Stage 1 Gulfstream IIB SEL Contour
Arrival Sound Exposure Levels (SEL)

Contours:	80 0	90 0	100 0	dBA
AREA(SQ MI) =	4.7	.7	.1	

Appendix A

Koala Weather Station Wind Rose Calculations

◎ **Table of Contents**



Koala Weather Station Wind Rose

Data Available from August 14/93 to January 3/95

Koala Weather Station Wind Rose Calculations

Preferred runway availability (runway 02 - arrivals, runway 20 - departures)

Acceptable windspeeds for.

							---------- in m/s ----------			
			Runway 20 Use		Runway 02 Use		Runway 20 Use		Runway 02 Use	
Direction (True)	Angle	Cos ()	@ 0 kts	@ 5 kts	@ 0 kts	@ 5 kts	@ 0 kts	@ 5 kts	@ 0 kts	@ 5 kts
North	23	0 920505	0	0	n/a	5 4	0 0	0 0	n/a	2 8
North-East	22	0 927184	0	0	n/a	5 4	0 0	0 0	n/a	2 8
East	67	0 390731	0	0	n/a	12 8	0 0	0 0	n/a	6 6
South-East	112	-0 37461	n/a	13 3	0	0	n/a	6 9	0 0	0 0
South	157	-0 9205	n/a	5 4	0	0	n/a	2 8	0 0	0 0
South-West	202	-0 92718	n/a	5 4	0	0	n/a	2 8	0 0	0 0
West	247	-0 39073	n/a	12 8	0	0	n/a	6 6	0 0	0 0
North-West	292	0 374607	0	0	n/a	13 3	0 0	0 0	n/a	6 9

Percentage of time winds are acceptable

	Runway 20 Use		Runway 02 Use	
Direction (True)	@ 0 kts	@ 5 kts	@ 0 kts	@ 5 kts
North	12%	12%	0%	3%
North-East	7%	7%	0%	2%
East	15%	15%	0%	10%
South-East	0%	7%	14%	14%
South	0%	2%	8%	8%
South-West	0%	3%	7%	7%
West	0%	8%	9%	9%
North-West	18%	18%	0%	15%
Calm	9%	9%	9%	9%
Total Availability	61%	81%	47%	77%

Appendix B

Aircraft Movements Spreadsheets

	BHP Diamonds Aircraft Noise Contours										
	Aircraft Movement Spreadsheet - Scenario 1										
Scenario:	Operations Period (2007 - Onwards)										
Peak Daily Movements:	*16*		8	flights per day							
Average Daily Movements:	*6*		3	flights per day							
% Night-time Movements:	*100%*										
Runway Useage:	Assume preferential runway useage with 5 kt tailwind acceptance										
% Runway Use	Rwy 02	Rwy 20									
Departures	0.23	*0.81*									
Arrivals	*0.77*	0.19									
PEAK PLANNING DAY CALCULATIONS (NEF)			**Departures**				**Arrivals**				
			Rwy 02	Rwy 02	Rwy 20	Rwy 20	Rwy 02	Rwy 02	Rwy 20	Rwy 20	
Aircraft Type	Code	% of a/c	Day	Night	Day	Night	Day	Night	Day	Night	Totals
B-727-200/JT8D-17	727D17	41.8%	0.00	0.77	0.00	2.71	0.00	2.57	0.00	0.64	6.69
Heavy twin-prop Cargo A/C	DC3	10.7%	0.00	0.20	0.00	0.70	0.00	0.66	0.00	0.16	1 72
DHC-6 Twin Otter	DHC6	43.6%	0.00	0.80	0.00	2.82	0.00	2.68	0.00	0.66	6.97
Gulfstream GIIB	GIIB	3.9%	0.00	0.07	0.00	0.25	0.00	0.24	0.00	0.06	0.62
		100.0%	0.00	1.84	0.00	6.48	0.00	6.16	0.00	1.52	16.00
											16.00
AVERAGE DAY CALCULATIONS (INM-SEL)			**Departures**				**Arrivals**				
			Rwy 02	Rwy 02	Rwy 20	Rwy 20	Rwy 02	Rwy 02	Rwy 20	Rwy 20	
Aircraft Type	Code	% of a/c	Day	Night	Day	Night	Day	Night	Day	Night	Totals
B-727-200/JT8D-17	727D17	41.8%	0.00	0.29	0.00	1.02	0.00	0.97	0.00	0.24	2.51
Heavy twin-prop Cargo A/C	DC3	10.7%	0.00	0.07	0.00	0.26	0.00	0.25	0.00	0.06	0.64
DHC-6 Twin Otter	DHC6	43.6%	0.00	0.30	0.00	1.06	0.00	1.01	0.00	0.25	2.61
Gulfstream GIIB	GIIB	3.9%	0.00	0.03	0.00	0.09	0.00	0.09	0.00	0.02	0.23
		100.0%	0.00	0.69	0.00	2.43	0.00	2.31	0.00	0.57	6.00
											6.00

	BHP Diamonds Aircraft Noise Contours										
	Aircraft Movement Spreadsheet - Scenario 2										
Scenario:	Operations Period (2007 - Onwards)										
Peak Daily Movements:	*16*		8	flights per day							
Average Daily Movements:	*6*		3	flights per day							
% Night-time Movements:	*100%*										
Runway Useage:	Assume preferential runway useage with 5 kt tailwind acceptance										
% Runway Use	Rwy 02	Rwy 20									
Departures	0.23	*0.81*									
Arrivals	*0.77*	0.19									
PEAK PLANNING DAY CALCULATIONS (NEF)			**Departures**				**Arrivals**				
			Rwy 02	Rwy 02	Rwy 20	Rwy 20	Rwy 02	Rwy 02	Rwy 20	Rwy 20	
Aircraft Type	Code	% of a/c	Day	Night	Day	Night	Day	Night	Day	Night	Totals
B-737/JT8D-7	737	41.8%	0.00	0.77	0.00	2.71	0.00	2.57	0.00	0.64	6.69
Heavy twin-prop Cargo A/C	DC3	10.7%	0.00	0.20	0.00	0.70	0.00	0.66	0.00	0.16	1.72
DHC-6 Twin Otter	DHC6	43.6%	0.00	0.80	0.00	2.82	0.00	2.68	0.00	0.66	6.97
Gulfstream GIIB	GIIB	3.9%	0.00	0.07	0.00	0.25	0.00	0.24	0.00	0.06	0.62
		100.0%	0.00	1.84	0.00	6.48	0.00	6.16	0.00	1.52	16.00
											16.00
AVERAGE DAY CALCULATIONS (INM-SEL)			**Departures**				**Arrivals**				
			Rwy 02	Rwy 02	Rwy 20	Rwy 20	Rwy 02	Rwy 02	Rwy 20	Rwy 20	
Aircraft Type	Code	% of a/c	Day	Night	Day	Night	Day	Night	Day	Night	Totals
B-737/JT8D-7	737	41.8%	0.00	0.29	0.00	1.02	0.00	0.97	0.00	0.24	2.51
Heavy twin-prop Cargo A/C	DC3	10.7%	0.00	0.07	0.00	0.26	0.00	0.25	0.00	0.06	0.64
DHC-6 Twin Otter	DHC6	43.6%	0.00	0.30	0.00	1.06	0.00	1.01	0.00	0.25	2.61
Gulfstream GIIB	GIIB	3.9%	0.00	0.03	0.00	0.09	0.00	0.09	0.00	0.02	0.23
		100.0%	0.00	0.69	0.00	2.43	0.00	2.31	0.00	0.57	6.00
											6.00

Appendix C

NEF Computer Program Input Files

```
1.0 "YES"
-50.0 16.0 1.00 100 33
0.0 0.0 0.0 0.0 50000.0 "BOTH"
"NOLINES" "MAXVALUS"
"TITLE" 0
NWT DIAMONDS AIRPORT NEF - SCEN 1 - R2
"RUNWY" 2
"02"  1  0.00 0.00  6.40 0.00 1 0
3.0 3.0 0.0 "DIST" 15.00
"20"  2  6.40 0.00  0.00 0.00 1 0
3.0 3.0 0.0 "DIST" 15.00
"AIRCF" 5
"     "  1  1  "727D17"  1  0.00  0.77
"     "  1  1  "727D17"  2  0.00  2.71
"     "  1  0  "727D17"  1  0.00  2.57
"     "  1  0  "727D17"  2  0.00  0.64
"     "  2  1  "737"     1  0.00  0.00
"     "  2  1  "737"     2  0.00  0.00
"     "  2  0  "737"     1  0.00  0.00
"     "  2  0  "737"     2  0.00  0.00
"     "  3  1  "DC3"     1  0.00  0.20
"     "  3  1  "DC3"     2  0.00  0.70
"     "  3  0  "DC3"     1  0.00  0.66
"     "  3  0  "DC3"     2  0.00  0.16
"     "  4  1  "DHC6"    1  0.00  0.80
"     "  4  1  "DHC6"    2  0.00  2.82
"     "  4  0  "DHC6"    1  0.00  2.68
"     "  4  0  "DHC6"    2  0.00  0.66
"     "  5  1  "GIIB"    1  0.00  0.07
"     "  5  1  "GIIB"    2  0.00  0.25
"     "  5  0  "GIIB"    1  0.00  0.24
"     "  5  0  "GIIB"    2  0.00  0.06
"END**"  0
```

```
1.0 "YES"
0.0 16.0 1.00 100 33
0.0 0.0 0.0 0.0 50000.0 "BOTH"
"NOLINES" "MAXVALUS"
"TITLE" 0
NWT DIAMONDS AIRPORT NEF - SCEN 2 - R2
"RUNWY" 2
"02"  1  0.00 0 00  6.40 0.00 1 0
3.0 3.0 0.0 "DIST" 15.00
"20"  2  6.40 0.00  0.00 0.00 1 0
3.0 3.0 0.0 "DIST" 15.00
"AIRCF" 5
"     "  1  1  "727D17"  1  0.00  0.00
"     "  1  1  "727D17"  2  0.00  0.00
"     "  1  0  "727D17"  1  0.00  0.00
"     "  1  0  "727D17"  2  0.00  0.00
"     "  2  1  "737"     1  0.00  0.77
"     "  2  1  "737"     2  0.00  2.71
"     "  2  0  "737"     1  0.00  2.57
"     "  2  0  "737"     2  0.00  0.64
"     "  3  1  "DC3"     1  0.00  0.20
"     "  3  1  "DC3"     2  0.00  0.70
"     "  3  0  "DC3"     1  0.00  0.66
"     "  3  0  "DC3"     2  0.00  0.16
"     "  4  1  "DHC6"    1  0.00  0.80
"     "  4  1  "DHC6"    2  0.00  2.82
"     "  4  0  "DHC6"    1  0.00  2.68
"     "  4  0  "DHC6"    2  0.00  0.66
"     "  5  1  "GIIB"    1  0.00  0.07
"     "  5  1  "GIIB"    2  0.00  0.25
"     "  5  0  "GIIB"    1  0.00  0.24
"     "  5  0  "GIIB"    2  0.00  0.06
"END**"  0
```

Appendix D

INM Program Input Files

```
BEGIN.

SETUP:

  TITLE <Aircraft Noise Leq Contour - Scenario 1 - Rev 2>
  AIRPORT <BHP Diamonds Mine Airport>

  ALTITUDE 1500
  TEMPERATURE 11 C

  RUNWAYS
    RW 02-20   0   0 TO 6400 0   HEADING=90

AIRCRAFT:

  TYPES
    AC 727D17
    AC 737
    AC DC3
    AC DHC6
    AC GIIB

TAKEOFFS BY FREQUENCY:

  TRACK TR1 RWY 02 STRAIGHT 50
    OPER 727D17 STAGE 1  N=0.29
    OPER 737    STAGE 1  N=0.00
    OPER DC3    STAGE 1  N=0.07
    OPER DHC6   STAGE 1  N=0.30
    OPER GIIB   STAGE 1  N=0.03
  TRACK TR2 RWY 20 STRAIGHT 50
    OPER 727D17 STAGE 1  N=1.02
    OPER 737    STAGE 1  N=0.00
    OPER DC3    STAGE 1  N=0.26
    OPER DHC6   STAGE 1  N=1.06
    OPER GIIB   STAGE 1  N=0.09

LANDINGS BY FREQUENCY:

  TRACK TR3 RWY 02 STRAIGHT 50
    OPER 727D17 PROF=STD3D  N=0.97
    OPER 737    PROF=STD3D  N=0.00
    OPER DC3    PROF=STD3D  N=0.25
    OPER DHC6   PROF=STD3D  N=1.01
    OPER GIIB   PROF=STD3D  N=0.09
  TRACK TR4 RWY 20 STRAIGHT 50
    OPER 727D17 PROF=STD3D  N=0.24
    OPER 737    PROF=STD3D  N=0.00
    OPER DC3    PROF=STD3D  N=0.06
    OPER DHC6   PROF=STD3D  N=0.25
    OPER GIIB   PROF=STD3D  N=0.02

PROCESS:

NOWARN.

  CONTOUR LEQ AT 45 50 55 60 65 WITH TOLERANCE=.2
          PLOT SIZE=11 8.5 SCALE=625

END.
```

```
BEGIN.

      SETUP:

        TITLE <Aircraft Noise Leq Contour - Scenario 2 - Rev 2>
        AIRPORT <BHP Diamonds Mine Airport>

        ALTITUDE 1500
        TEMPERATURE 11 C

        RUNWAYS
          RW 02-20   0   0 TO 6400 0   HEADING=90

      AIRCRAFT:

        TYPES
          AC 727D17
          AC 737
          AC DC3
          AC DHC6
          AC GIIB

      TAKEOFFS BY FREQUENCY:

        TRACK TR1 RWY 02 STRAIGHT 50
          OPER 727D17 STAGE 1  N=0.00
          OPER 737    STAGE 1  N=0.29
          OPER DC3    STAGE 1  N=0.07
          OPER DHC6   STAGE 1  N=0.30
          OPER GIIB   STAGE 1  N=0.03
        TRACK TR2 RWY 20 STRAIGHT 50
          OPER 727D17 STAGE 1  N=0.00
          OPER 737    STAGE 1  N=1.02
          OPER DC3    STAGE 1  N=0.26
          OPER DHC6   STAGE 1  N=1.06
          OPER GIIB   STAGE 1  N=0.09

      LANDINGS BY FREQUENCY:

        TRACK TR3 RWY 02 STRAIGHT 50
          OPER 727D17 PROF=STD3D  N=0.00
          OPER 737    PROF=STD3D  N=0.97
          OPER DC3    PROF=STD3D  N=0.25
          OPER DHC6   PROF=STD3D  N=1.01
          OPER GIIB   PROF=STD3D  N=0.09
        TRACK TR4 RWY 20 STRAIGHT 50
          OPER 727D17 PROF=STD3D  N=0.00
          OPER 737    PROF=STD3D  N=0.24
          OPER DC3    PROF=STD3D  N=0.06
          OPER DHC6   PROF=STD3D  N=0.25
          OPER GIIB   PROF=STD3D  N=0.02

      PROCESS:

      NOWARN.

        CONTOUR LEQ AT 45 50 55 60 65 WITH TOLERANCE=.2
                PLOT SIZE=11 8.5 SCALE=625

      END.
```

Appendix E

Sample INM - SEL Input File

```
BEGIN.

SETUP:

  TITLE <Stage 1 B727-200/JT8D-17 SEL Contour>
  AIRPORT <Departure SEL = Ldn + 20 dB>

  ALTITUDE 1500
  TEMPERATURE 11 C

  RUNWAYS
    RW 02-20   0   0 TO 6400 0    HEADING=90

AIRCRAFT:

  TYPES
    AC 727D17

TAKEOFFS BY FREQUENCY:

  TRACK TR1 RWY 02 STRAIGHT 40000
    OPER 727D17 STAGE 1 D=864

LANDINGS BY FREQUENCY:

  TRACK TR2 RWY 02 HEADING 90 STRAIGHT 40000
    OPER 727D17 PROF STD3D D=0

PROCESS:

NOWARN.

  CONTOUR LDN AT 60 70 80 WITH TOLERANCE=.2
          PLOT SIZE=11 8.5 SCALE=2083

END.
```

Appendix IV-B3

Sound Contour Modelling Program - SOUNDMDL©

INTRODUCTION

Sound propagation out of doors is a complicated interaction of sound waves and the environment through which they pass. Sound is attenuated by the air through which it passes. It is bent by winds and by thermal gradients. It is diffracted by barriers, diminished with distance, and is cancelled or amplified by reflections due to the ground. Wind, thermal gradients and ground effect have been empirically modelled based on measurements made in benchmark studies by Parkin and Scholes.[1,2] The computer program SOUNDMDL has been written to undertake these calculations.

DESCRIPTION OF THE PROGRAM

The program performs all of its calculations in octave bands from 63 Hz. to 4000 Hz. to allow consideration of the frequency effects of the attenuating factors on the sound propagation. The results are converted to "A"-weighted levels at the output stage.

Each source of sound is considered to be a point source with X, Y, and Z coordinates. This is a valid assumption with the distances involved in the use of the model. Where a line source is required, such as vehicles on roads, the line source is modelled as a series of point sources and the vehicles are apportioned to each point. Each source can also have a Directivity Index applied to the four principle compass points. Directivity is interpolated for intermediate points.[3] Each source has unique sound power levels in octave bands.

---

1 Parkin, P H. and Scholes, W.E., "The Horizontal Propagation of Sound from a Jet Engine Close to the Ground, at Radlett", *Journal of Sound and Vibration* (1964) **1**, 1-13

2 Parkin, P.H. and Scholes, W.E., "The Horizontal Propagation of Sound from a Jet Engine Close to the Ground, at Hatfield", *Journal of Sound and Vibration* (1965) **2**, 353-374

3 For mobile equipment, directivity generally cannot be predicted Therefore in these situations maximum sound power is applied in all directions.

A receiver location is selected using X, Y, and Z coordinates. For each source, the program computes the bearing and distance from source to receiver. This information is then used to calculate the Directivity Index effect for the source and the attenuations due to distance, atmospheric absorption, wind, thermal gradients, ground effect and barriers. The effective attenuation of wind and thermal gradients are weighted by the relative probability of their occurrence (determined using meteorologic data for the area) and the resulting average attenuation is applying this effective attenuation to the sound propagation. The resulting sound pressure level at the receiver is then summed (on an energy basis) with the sound from all other sources to the same receiver and the total sound pressure is determined. The "A"-weighted sound level is calculated at this point. By relocating the receiver through a grid of points, an array of levels can be developed and sound level contours derived.

Distance Attenuation

Attenuation due to distance has been computed using standard wave divergence formulae which use an inverse square relationship for the decrease in sound pressure level with increasing distance.

Atmospheric Absorption

Sound passing for any distance through the atmosphere is attenuated by the passage. Attenuation due to atmospheric absorption has been computed using the American National Standards Institute (ANSI) Standard S1.26, "Method for the Calculation of the Absorption of Sound by the Atmosphere".

Attenuation Due to Wind

Wind generally has a velocity gradient with wind speed increasing with elevation. This gradient affects the sound waves travelling through the moving air such that sound travelling downwind is bent progressively downwards with a resulting amplification.

Correspondingly, sound travelling upwind is bent progressively upwards and there is an attenuation of the sound. Sound travelling at right angles to the wind direction is relatively unaffected.

Attenuation due to wind is based on the Parkin and Scholes data. Wind is input in terms of velocity and direction. Three velocity conditions are considered. The first condition is a zero velocity (calm) and the attenuation is zero. The second is a wind speed of plus 5 m/s [approx 16 Kmh] (where plus indicates that the wind is moving in the same direction as the sound). Under this condition, the attenuation factor can be negative and sound levels can increase. The third is a wind speed of minus 5 m/s. Under this condition, the attenuation factor is positive. Winds at greater speeds are assumed to be equivalent to 5 m/s as the increased wind speed raises the ambient sound levels at the receiver and the increased turbulence tends to break up the sound signal. The relative bearing of the sound direction to wind direction is computed and a cosine^2 function is used to determine attenuation at angles other than zero.

Attenuation Due to Thermal Gradients

Attenuation due to thermal gradients is based on the Parkin and Scholes data. Three thermal conditions are considered: Inversion, Lapse, and Isothermal Neutral. When the air temperature varies with height from the ground, sound passing through the air at an angle to the thermal gradient will be bent. Under inversion conditions, where the air temperature increases with elevation, sound is bent downwards. Under lapse conditions, where air temperature decreases with elevation, sound is bent upwards. Under neutral conditions, sound travels in a straight path.

Under inversion conditions, sound which would normally travel up into the atmosphere and dissipate is bent progressively downwards and adds to the sound which would normally travel on a straight line from source to receiver. Thus the sound level increases. Under lapse conditions, sound normally travelling from source to receiver is bent progressively upwards where it dissipates in the atmosphere. The result is that the sound level at the receiver decreases. Under neutral conditions the sound level neither increases or decreases. Both neutral and lapse conditions can occur when there is a wind but inversions tend to be collapsed by winds.

The program permits the coexistence of winds with isothermal neutral and lapse conditions. It will only allow inversion conditions with no wind. As inversion, isothermal neutral, and lapse conditions apply equally in all directions from the source, source/receiver bearing is not applied to this calculation.

Ground Effect Attenuation

In any outdoor sound propagation situation there is usually reflection of the sound off the ground to the receiver in addition to the direct straight line path from source to receiver. This reflected sound interacts with the direct sound and can have a significant influence due to phase cancellation. The effect is to increase the attenuation from source to receiver in mid frequencies while providing amplifications at lower frequencies. The factors which modify this interaction include ground geometry, ground cover, and ground effect (the acoustical impedance of the ground surface). All of these factors are frequency dependent and depend on the relative locations (distances and angles) of source, ground, and receiver. Ground interaction effects have been included in the calculations using the Parkin and Scholes data.

Barrier Attenuation

When a barrier is placed in the path between a source and receiver sound is attenuated. The extent of the attenuation depends on the frequency of the sound and the degree of penetration of the barrier into the source/receiver path. The barriers can be natural terrain obstacles, as well as manmade obstacles such as berms, buildings, and fences. The program calculates the attenuation due to barriers using standard models developed from optical diffraction theory.

The program allows the input of multiple barriers with each barrier described by X, Y, and Z coordinates for its end points. It is assumed that the top of the barrier is a straight line between these points. Irregularly shaped obstacles are each described by using several barriers to outline their general shapes. For each source/receiver path, the program determines which, if any, of the barriers are significant. If more than one barrier interrupts the path, the attenuation of the barrier which has the greatest attenuation is used. Barrier attenuations are not accumulated.

As barriers tend to cancel out ground effect, if a barrier is present on a specific source/receiver path, the ground effect attenuation which would otherwise exist if the barrier were not present is reduced in recognition of this factor.

Program Input

The input data is accumulated into a single file which is then read by the program. This input data file forms a complete record of the input data on which the sound contour calculations have been made. The program input data for the scenarios evaluated on this project follow.

Panda - Scenario 1 Input Data (Summer)

This is the data used to input the initial stages of the Panda pit. Due to the proximity of this pit to the plant, the model includes both operations. The year modelled is 1999.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,170,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

SUMMER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-P1S
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Panda Pit Scenario 1 (1999) - Summer
/Metric or English (M/E)
M
/Number of Sources
27
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number   X         Y           Z      Comment
1       18000    6600     490,"Plant Building"
2       18000    6300     465,"Main Powerplant"
3       18060    6300     465,"Crusher"
4       16600    7750     490,"Dump Road Flat d1"
5       17080    7870     490,"Dump Road Flat d2"
6       17500    8100     490,"Dump Road Flat d3"
7       17920    8240     490,"Dump Road Flat d4"
8       18340    8200     490,"Dump Road Flat d5"
9       18860    8100     490,"Dump Road Flat d6"
10      19260    8020     467,"Dump Road grade d7"
11      19960    8120     427,"Dump Road grade d8"
12      18140    6940     475,"Ore Road Flat o1"
13      18240    7160     475,"Ore Road Flat o2"
14      18400    7340     475,"Ore Road Flat o3"
15      18620    7500     470,"Ore Road Grade o4"
16      18860    7600     465,"Ore Road Grade o5"
17      19100    7740     460,"Ore Road Grade o6"
18      19340    7860     457,"Ore Road Grade o7"
19      19500    8030     440,"Ore Road Grade o8"
20      19660    8120     427,"Ore Road Grade o9"
21      19660    8120     427,"Shovel in Pit"
22      19660    8120     427,"Loader in Pit"
23      16600    7750     490,"Cat at Rock Dump"
24      18000    6600     490,"Cat at plant"
25      18000    6600     490,"Loader at plant"
26      18000    6600     490,"Excavator at plant"
27      19660    8140     400, "Diesel Rotary Drill"
/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources
```

Panda - Scenario 1 Input Data (Summer)

```
/No.   63     125    250    500    1000   2000   4000     N     E     S     W
1     113    114    111    112    111    108    106      0     0     0     0
2     129.5  108.5  101.5  104.5  108.5  110.5  109.5    0     0     0     0
3     122.4  122.4  119.4  125.4  121.4  114.4  106.4    0     0     0     0
4     118.9  119.9  116.9  117.9  116.9  113.9  111.9    0     0     0     0
5     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
6     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
7     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
8     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
9     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
10    121.6  125.5  117.4  117.5  115.9  114.2  112.4    0     0     0     0
11    124.6  128.5  120.4  120.5  118.9  117.2  115.4    0     0     0     0
12    108.8  109.8  106.8  107.8  106.8  103.8  101.8    0     0     0     0
13    105.8  106.8  103.8  104.8  103.8  100.8   98.8    0     0     0     0
14    105.8  106.8  103.8  104.8  103.8  100.8   98.8    0     0     0     0
15    111.5  115.4  107.3  107.4  105.8  104.1  102.3    0     0     0     0
16    111.5  115.4  107.3  107.4  105.8  104.1  102.3    0     0     0     0
17    111.5  115.4  107.3  107.4  105.8  104.1  102.3    0     0     0     0
18    111.5  115.4  107.3  107.4  105.8  104.1  102.3    0     0     0     0
19    111.5  115.4  107.3  107.4  105.8  104.1  102.3    0     0     0     0
20    114.5  118.4  110.3  110.4  108.8  107.1  105.3    0     0     0     0
21    116.4  117.4  114.4  115.4  114.4  111.4  109.4    0     0     0     0
22    111.7  114.7  112.7  108.7  111.7  111.7  101.7    0     0     0     0
23    117.4  120.4  114.4  118.4  114.4  114.4  112.4    0     0     0     0
24    108.4  111.4  105.4  109.4  105.4  105.4  103.4    0     0     0     0
25    102.4  105.4  103.4   99.4  102.4  102.4   92.4    0     0     0     0
26    112.4  114.4  109.4  106.4  106.4  101.4   97.4    0     0     0     0
27    117.4  120.4  114.4  118.4  114.4  114.4  112.4    0     0     0     0
/Number of Barriers
11
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)
/#    X1          Y1          Z1          X2          Y2          Z2
1     18500       8000        490         18600       8900        490
2     16860       8550        490         17080       8600        498
3     17080       8600        498         17300       8600        490
4     17200       8200        497         17340       8260        497
5     17300       8500        497         17600       8600        497
6     17020       7450        504         17200       7450        504
7     20000       3800        505         21100       5240        505
8     23800       7900        505         23800       8100        505
9     22700       7600        500         22700       7800        500
10    16600       7700        490         19600       8750        490
11    20550       10000       500         20980       9600        500
Temperature (deg celsius)
12
/Relative Humidity %value (0 - 100)
35
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
12.5
/Neutral - No Wind
35.5
```

Panda - Scenario 1 Input Data (Summer)

```
/Lapse - No Wind
10.4
/Neutral - Wind from Predominant Direction 1
20
/Neutral - Wind from Predominant Direction 2
12
/Lapse - Wind from Predominant Direction 1
6
/Lapse - Wind from Predominant Direction 2
3.6
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
18000    7000
/Minimum Radial Distance from Receiver Origin
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1;  The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle  (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0       475
250     480
710     485
1690    490
1980    495
200000  495
45
0       475
2900    475
3540    500
4000    510
4330    505
4520    500
5000    475
200000  475
90
0       475
3220    475
4100    500
200000  500
```

Panda - Scenario 1 Input Data (Summer)

```
135
0         475
1700      475
3280      500
3900      500
4780      475
200000    475
180
0         475
2200      450
200000    450
225
0         475
600       475
2800      450
3460      450
4640      425
6000      450
200000    450
270
0         475
1640      475
2600      450
3600      450
4620      475
200000    475
315
0         475
200000    475
359
0         475
250       480
710       485
1690      490
1980      495
200000    495
```

Panda - Scenario 1 Input Data (Winter)

This is the data used to input the initial stages of the Panda pit. Due to the proximity of this pit to the plant, the model includes both operations. The year modelled is 1999.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,170,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

WINTER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-P1W
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Panda Pit Scenario 1 (1999) - Winter
/Metric or English (M/E)
M
/Number of Sources
27
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number   X          Y              Z     Comment
1       18000    6600     490,"Plant Building"
2       18000    6300     465,"Main Powerplant"
3       18060    6300     465,"Crusher"
4       16600    7750     490,"Dump Road Flat d1"
5       17080    7870     490,"Dump Road Flat d2"
6       17500    8100     490,"Dump Road Flat d3"
7       17920    8240     490,"Dump Road Flat d4"
8       18340    8200     490,"Dump Road Flat d5"
9       18860    8100     490,"Dump Road Flat d6"
10      19260    8020     467,"Dump Road grade d7"
11      19960    8120     427,"Dump Road grade d8"
12      18140    6940     475,"Ore Road Flat o1"
13      18240    7160     475,"Ore Road Flat o2"
14      18400    7340     475,"Ore Road Flat o3"
15      18620    7500     470,"Ore Road Grade o4"
16      18860    7600     465,"Ore Road Grade o5"
17      19100    7740     460,"Ore Road Grade o6"
18      19340    7860     457,"Ore Road Grade o7"
19      19500    8030     440,"Ore Road Grade o8"
20      19660    8120     427,"Ore Road Grade o9"
21      19660    8120     427,"Shovel in Pit"
22      19660    8120     427,"Loader in Pit"
23      16600    7750     490,"Cat at Rock Dump"
24      18000    6600     490,"Cat at plant"
25      18000    6600     490,"Loader at plant"
26      18000    6600     490,"Excavator at plant"
27      19660    8140     400, "Diesel Rotary Drill"
/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources
/No.   63    125    250    500    1000    2000    4000     N     E     S     W
```

Panda - Scenario 1 Input Data (Winter)

1	113	114	111	112	111	108	106	0	0	0	0
2	129.5	108.5	101.5	104.5	108.5	110.5	109.5	0	0	0	0
3	122.4	122.4	119.4	125.4	121.4	114.4	106.4	0	0	0	0
4	118.9	119.9	116.9	117.9	116.9	113.9	111.9	0	0	0	0
5	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
6	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
7	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
8	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
9	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
10	121.6	125.5	117.4	117.5	115.9	114.2	112.4	0	0	0	0
11	124.6	128.5	120.4	120.5	118.9	117.2	115.4	0	0	0	0
12	108.8	109.8	106.8	107.8	106.8	103.8	101.8	0	0	0	0
13	105.8	106.8	103.8	104.8	103.8	100.8	98.8	0	0	0	0
14	105.8	106.8	103.8	104.8	103.8	100.8	98.8	0	0	0	0
15	111.5	115.4	107.3	107.4	105.8	104.1	102.3	0	0	0	0
16	111.5	115.4	107.3	107.4	105.8	104.1	102.3	0	0	0	0
17	111.5	115.4	107.3	107.4	105.8	104.1	102.3	0	0	0	0
18	111.5	115.4	107.3	107.4	105.8	104.1	102.3	0	0	0	0
19	111.5	115.4	107.3	107.4	105.8	104.1	102.3	0	0	0	0
20	114.5	118.4	110.3	110.4	108.8	107.1	105.3	0	0	0	0
21	116.4	117.4	114.4	115.4	114.4	111.4	109.4	0	0	0	0
22	111.7	114.7	112.7	108.7	111.7	111.7	101.7	0	0	0	0
23	117.4	120.4	114.4	118.4	114.4	114.4	112.4	0	0	0	0
24	108.4	111.4	105.4	109.4	105.4	105.4	103.4	0	0	0	0
25	102.4	105.4	103.4	99.4	102.4	102.4	92.4	0	0	0	0
26	112.4	114.4	109.4	106.4	106.4	101.4	97.4	0	0	0	0
27	117.4	120.4	114.4	118.4	114.4	114.4	112.4	0	0	0	0

/Number of Barriers
11
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)

/#	X1	Y1	Z1	X2	Y2	Z2
1	18500	8000	490	18600	8900	490
2	16860	8550	490	17080	8600	498
3	17080	8600	498	17300	8600	490
4	17200	8200	497	17340	8260	497
5	17300	8500	497	17600	8600	497
6	17020	7450	504	17200	7450	504
7	20000	3800	505	21100	5240	505
8	23800	7900	505	23800	8100	505
9	22700	7600	500	22700	7800	500
10	16600	7700	490	19600	8750	490
11	20550	10000	500	20980	9600	500

Temperature (deg celsius)
-25
/Relative Humidity %value (0 - 100)
20
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
26
/Neutral - No Wind
33.28
/Lapse - No Wind

Panda - Scenario 1 Input Data (Winter)

```
5.2
/Neutral - Wind from Predominant Direction 1
19.2
/Neutral - Wind from Predominant Direction 2
11.52
/Lapse - Wind from Predominant Direction 1
3
/Lapse - Wind from Predominant Direction 2
1.8
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
18000    7000
/Minimum Radial Distance from Receiver Origin
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1;  The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle  (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0        475
250      480
710      485
1690     490
1980     495
200000   495
45
0        475
2900     475
3540     500
4000     510
4330     505
4520     500
5000     475
200000   475
90
0        475
3220     475
4100     500
200000   500
135
```

Panda - Scenario 1 Input Data (Winter)

```
0       475
1700    475
3280    500
3900    500
4780    475
200000  475
180
0       475
2200    450
200000  450
225
0       475
600     475
2800    450
3460    450
4640    425
6000    450
200000  450
270
0       475
1640    475
2600    450
3600    450
4620    475
200000  475
315
0       475
200000  475
359
0       475
250     480
710     485
1690    490
1980    495
200000  495
```

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Panda and Koala - Scenario 2 Input Data (Summer)

This is the data used for the operating stage of the Panda pit and the initial stage of the Koala pit. Due to the proximity of this pit to the plant, the model includes both operations. The year modelled is 2001.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,170,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

SUMMER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-P2S
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Panda & Koala Pits Scenario 2 (2001) - Summer
/Metric or English (M/E)
M
/Number of Sources
45
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number   X             Y             Z     Comment
1        18000     6600     490,"Plant Building"
2        18000     6300     465,"Main Powerplant"
3        18060     6300     465,"Crusher"
4        16600     7750     490,"Panda Dump Road Flat d1"
5        17080     7870     490,"Panda Dump Road Flat d2"
6        17500     8100     490,"Panda Dump Road Flat d3"
7        17920     8240     490,"Panda Dump Road Flat d4"
8        18340     8200     490,"Panda Dump Road Flat d5"
9        18860     8100     490,"Panda Dump Road Flat d6"
10       19260     8020     467,"Panda Dump Road grade d7"
11       19960     8120     427,"Panda Dump Road grade d8"
12       18975     7050     442,"Koala Dump Road grade d1"
13       18850     7100     442,"Koala Dump Road grade d2"
14       18500     7125     460,"Koala Dump Road grade d3"
15       18240     7160     475,"Koala Dump Road grade d4"
16       17925     7060     485,"Koala Dump Road flat d5"
17       17600     7040     485,"Koala Dump Road grade d6"
18       17250     7010     495,"Koala Dump Road flat d7"
19       16920     6995     495,"Koala Dump Road flat d8"
20       16650     6990     495,"Koala Dump Road flat d9"
21       16250     6950     495,"Koala Dump Road flat d10"
22       15925     6930     495,"Koala Dump Road flat d11"
23       18140     6940     475,"Panda Ore Road Flat o1"
24       18240     7160     475,"Panda Ore Road Flat o2"
25       18400     7340     475,"Panda Ore Road Flat o3"
26       18620     7500     470,"Panda Ore Road Grade o4"
27       18860     7600     465,"Panda Ore Road Grade o5"
28       19100     7740     460,"Panda Ore Road Grade o6"
29       19340     7860     457,"Panda Ore Road Grade o7"
30       19500     8030     440,"Panda Ore Road Grade o8"
31       19660     8120     427,"Panda Ore Road Grade o9"
32       19800     8050     400,"Panda Ore Road Grade o10"
```

Panda and Koala - Scenario 2 Input Data (Summer)

```
33      19900    8000     375,"Panda Ore Road Grade o11"
34      19800    7900     350,"Panda Ore Road Grade o12"
35      19660    8120     427,"Panda Shovel in Pit"
36      19660    8120     427,"Panda Loader in Pit"
37      16600    7750     490,"Cat at Panda Rock Dump"
38      18000    6600     490,"Cat at plant"
39      18000    6600     490,"Loader at plant"
40      18000    6600     490,"Excavator at plant"
41      19660    8140     400,"Panda Diesel Rotary Drill"
42      18975    7050     442,"Koala Shovel in Pit"
43      18975    7050     442,"Koala Loader in Pit"
44      15925    6930     495,"Cat at Koala Rock Dump"
45      19660    8140     400,"Koala Diesel Rotary Drill"
/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources
/No.    63     125    250    500    1000   2000   4000    N     E     S     W
1     113    114    111    112    111    108    106     0     0     0     0
2     129.5  108.5  101.5  104.5  108.5  110.5  109.5   0     0     0     0
3     122.4  122.4  119.4  125.4  121.4  114.4  106.4   0     0     0     0
4     118.9  119.9  116.9  117.9  116.9  113.9  111.9   0     0     0     0
5     115.9  116.9  113.9  114.9  113.9  110.9  108.9   0     0     0     0
6     115.9  116.9  113.9  114.9  113.9  110.9  108.9   0     0     0     0
7     115.9  116.9  113.9  114.9  113.9  110.9  108.9   0     0     0     0
8     115.9  116.9  113.9  114.9  113.9  110.9  108.9   0     0     0     0
9     115.9  116.9  113.9  114.9  113.9  110.9  108.9   0     0     0     0
10    121.6  125.5  117.4  117.5  115.9  114.2  112.4   0     0     0     0
11    124.6  128.5  120.4  120.5  118.9  117.2  115.4   0     0     0     0
12     83.4   87.3   79.2   79.3   77.7   76.0   74.2   0     0     0     0
13     80.4   84.3   76.2   76.3   74.7   73.0   71.2   0     0     0     0
14     80.4   84.3   76.2   76.3   74.7   73.0   71.2   0     0     0     0
15     80.4   84.3   76.2   76.3   74.7   73.0   71.2   0     0     0     0
16     74.7   75.7   72.7   73.7   72.7   69.7   67.7   0     0     0     0
17     80.4   84.3   76.2   76.3   74.7   73.0   71.2   0     0     0     0
18     74.7   75.7   72.7   73.7   72.7   69.7   67.7   0     0     0     0
19     74.7   75.7   72.7   73.7   72.7   69.7   67.7   0     0     0     0
20     74.7   75.7   72.7   73.7   72.7   69.7   67.7   0     0     0     0
21     74 7   75.7   72.7   73.7   72 7   69.7   67.7   0     0     0     0
22     77.7   78.7   75.7   76.7   75.7   72.7   70.7   0     0     0     0
23    111.4  112.4  109.4  110.4  109.4  106.4  104.4   0     0     0     0
24    108.4  109.4  106.4  107.4  106.4  103.4  101.4   0     0     0     0
25    108.4  109.4  106.4  107.4  106.4  103.4  101.4   0     0     0     0
26    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
27    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
28    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
29    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
30    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
31    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
32    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
33    114.1  118.0  109.9  110.0  108.4  106.7  104.9   0     0     0     0
34    117.1  121.0  112.9  113.0  111.4  109.7  107.9   0     0     0     0
35    113.9  114.9  111.9  112.9  111.9  108.9  106.9   0     0     0     0
36    111.3  114.3  112.3  108.3  111.3  111.3  101.3   0     0     0     0
37    119.2  122.2  116.2  120.2  116.2  116.2  114.2   0     0     0     0
38    108.4  111.4  105.4  109.4  105.4  105.4  103.4   0     0     0     0
39    102.4  105.4  103.4   99.4  102.4  102.4   92.4   0     0     0     0
40    112.5  114.5  109.5  106.5  106.5  101.5   97.5   0     0     0     0
41    114.6  117.6  111.6  115.6  111.6  111.6  109.6   0     0     0     0
```

Panda and Koala - Scenario 2 Input Data (Summer)

42	112.7	113.7	110.7	111.7	110.7	107.7	105.7	0	0	0	0
43	101.9	104.9	102.9	98.9	101.9	101.9	91.9	0	0	0	0
44	118.8	121.8	115.8	119.8	115.8	115.8	113.8	0	0	0	0
45	114.3	117.3	111.3	115.3	111.3	111.3	109.3	0	0	0	0

/Number of Barriers
20
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)

/#	X1	Y1	Z1	X2	Y2	Z2
1	19000	7950	505	19000	9600	505
2	16860	8550	490	17080	8600	498
3	17080	8600	498	17300	8600	490
4	17200	8200	497	17340	8260	497
5	17300	8500	497	17600	8600	497
6	17020	7450	504	17200	7450	504
7	20000	3800	505	21100	5240	505
8	23800	7900	505	23800	8100	505
9	22700	7600	500	22700	7800	500
10	16500	7700	505	19600	9000	505
11	20550	10000	500	20980	9600	500
12	16500	7700	495	15800	7000	495
13	18600	6800	445	18600	7200	445
14	18600	7200	445	19000	7200	445
15	19000	7200	445	19000	6800	445
16	19000	6800	445	18600	6800	445
17	19400	7700	457	19400	8300	457
18	19400	8300	457	20000	8300	457
19	20000	8300	457	20000	7700	457
20	20000	7700	457	19400	7700	457

Temperature (deg celsius)
12
/Relative Humidity %value (0 - 100)
35
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
12.5
/Neutral - No Wind
35.5
/Lapse - No Wind
10.4
/Neutral - Wind from Predominant Direction 1
20
/Neutral - Wind from Predominant Direction 2
12
/Lapse - Wind from Predominant Direction 1
6
/Lapse - Wind from Predominant Direction 2
3.6
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
18000   7000

Panda and Koala - Scenario 2 Input Data (Summer)

```
/Minimum Radial Distance from Receiver Origin
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1;  The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle  (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0       475
250     480
710     485
1000    505
2000    505
2100    495
200000  495
45
0       475
2900    475
3540    500
4000    510
4330    505
4520    500
5000    475
200000  475
90
0       475
3220    475
4100    500
200000  500
135
0       475
1700    475
3280    500
3900    500
4780    475
200000  475
180
0       475
2200    450
200000  450
225
0       475
```

Panda and Koala - Scenario 2 Input Data (Summer)

600	475
2800	450
3460	450
4640	425
6000	450
200000	450
270	
0	475
1640	475
2600	450
3600	450
4620	475
200000	475
315	
0	475
790	475
800	495
1800	495
1810	475
200000	475
359	
0	475
250	480
710	485
1000	505
2000	505
2100	495
200000	495

Panda and Koala - Scenario 2 Input Data (Winter)

This is the data used for the operating stage of the Panda pit and the initial stage of the Koala pit. Due to the proximity of this pit to the plant, the model includes both operations. The year modelled is 2001.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,170,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

WINTER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-P2W
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Panda & Koala Pits Scenario 2 (2001) - Winter
/Metric or English (M/E)
M
/Number of Sources
45
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number   X          Y             Z     Comment
1        18000    6600     490,"Plant Building"
2        18000    6300     465,"Main Powerplant"
3        18060    6300     465,"Crusher"
4        16600    7750     490,"Panda Dump Road Flat d1"
5        17080    7870     490,"Panda Dump Road Flat d2"
6        17500    8100     490,"Panda Dump Road Flat d3"
7        17920    8240     490,"Panda Dump Road Flat d4"
8        18340    8200     490,"Panda Dump Road Flat d5"
9        18860    8100     490,"Panda Dump Road Flat d6"
10       19260    8020     467,"Panda Dump Road grade d7"
11       19960    8120     427,"Panda Dump Road grade d8"
12       18975    7050     442,"Koala Dump Road grade d1"
13       18850    7100     442,"Koala Dump Road grade d2"
14       18500    7125     460,"Koala Dump Road grade d3"
15       18240    7160     475,"Koala Dump Road grade d4"
16       17925    7060     485,"Koala Dump Road flat d5"
17       17600    7040     485,"Koala Dump Road grade d6"
18       17250    7010     495,"Koala Dump Road flat d7"
19       16920    6995     495,"Koala Dump Road flat d8"
20       16650    6990     495,"Koala Dump Road flat d9"
21       16250    6950     495,"Koala Dump Road flat d10"
22       15925    6930     495,"Koala Dump Road flat d11"
23       18140    6940     475,"Panda Ore Road Flat o1"
24       18240    7160     475,"Panda Ore Road Flat o2"
25       18400    7340     475,"Panda Ore Road Flat o3"
26       18620    7500     470,"Panda Ore Road Grade o4"
27       18860    7600     465,"Panda Ore Road Grade o5"
28       19100    7740     460,"Panda Ore Road Grade o6"
29       19340    7860     457,"Panda Ore Road Grade o7"
30       19500    8030     440,"Panda Ore Road Grade o8"
31       19660    8120     427,"Panda Ore Road Grade o9"
32       19800    8050     400,"Panda Ore Road Grade o10"
```

Panda and Koala - Scenario 2 Input Data (Winter)

33	19900	8000	375,"Panda Ore Road Grade o11"
34	19800	7900	350,"Panda Ore Road Grade o12"
35	19660	8120	427,"Panda Shovel in Pit"
36	19660	8120	427,"Panda Loader in Pit"
37	16600	7750	490,"Cat at Panda Rock Dump"
38	18000	6600	490,"Cat at plant"
39	18000	6600	490,"Loader at plant"
40	18000	6600	490,"Excavator at plant"
41	19660	8140	400,"Panda Diesel Rotary Drill"
42	18975	7050	442,"Koala Shovel in Pit"
43	18975	7050	442,"Koala Loader in Pit"
44	15925	6930	495,"Cat at Koala Rock Dump"
45	19660	8140	400,"Koala Diesel Rotary Drill"

/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources

/No.	63	125	250	500	1000	2000	4000	N	E	S	W
1	113	114	111	112	111	108	106	0	0	0	0
2	129.5	108.5	101.5	104.5	108.5	110.5	109.5	0	0	0	0
3	122.4	122.4	119.4	125.4	121.4	114.4	106.4	0	0	0	0
4	118.9	119.9	116.9	117.9	116.9	113.9	111.9	0	0	0	0
5	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
6	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
7	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
8	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
9	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
10	121.6	125.5	117.4	117.5	115.9	114.2	112.4	0	0	0	0
11	124.6	128.5	120.4	120.5	118.9	117.2	115.4	0	0	0	0
12	83.4	87.3	79.2	79.3	77.7	76.0	74.2	0	0	0	0
13	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
14	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
15	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
16	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
17	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
18	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
19	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
20	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
21	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
22	77.7	78.7	75.7	76.7	75.7	72.7	70.7	0	0	0	0
23	111.4	112.4	109.4	110.4	109.4	106.4	104.4	0	0	0	0
24	108.4	109.4	106.4	107.4	106.4	103.4	101.4	0	0	0	0
25	108.4	109.4	106.4	107.4	106.4	103.4	101.4	0	0	0	0
26	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
27	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
28	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
29	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
30	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
31	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
32	114.1	118.0	109.9	110.0	108.4	106 7	104.9	0	0	0	0
33	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
34	117.1	121.0	112.9	113.0	111.4	109.7	107.9	0	0	0	0
35	113.9	114.9	111.9	112.9	111.9	108.9	106.9	0	0	0	0
36	111.3	114.3	112.3	108.3	111.3	111.3	101.3	0	0	0	0
37	119.2	122.2	116.2	120.2	116.2	116.2	114.2	0	0	0	0
38	108.4	111.4	105.4	109.4	105.4	105.4	103.4	0	0	0	0
39	102.4	105.4	103.4	99.4	102.4	102.4	92.4	0	0	0	0
40	112.5	114.5	109.5	106.5	106.5	101.5	97.5	0	0	0	0
41	114.6	117.6	111.6	115.6	111.6	111.6	109.6	0	0	0	0

Panda and Koala - Scenario 2 Input Data (Winter)

```
42   112.7  113.7  110.7  111.7  110.7  107.7  105.7    0      0      0      0
43   101.9  104.9  102.9   98.9  101.9  101.9   91.9    0      0      0      0
44   118.8  121.8  115.8  119.8  115.8  115.8  113.8    0      0      0      0
45   114.3  117.3  111.3  115.3  111.3  111.3  109.3    0      0      0      0
/Number of Barriers
20
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)
/#     X1            Y1             Z1             X2             Y2              Z2
1    19000         7950            505          19000          9600             505
2    16860         8550            490          17080          8600             498
3    17080         8600            498          17300          8600             490
4    17200         8200            497          17340          8260             497
5    17300         8500            497          17600          8600             497
6    17020         7450            504          17200          7450             504
7    20000         3800            505          21100          5240             505
8    23800         7900            505          23800          8100             505
9    22700         7600            500          22700          7800             500
10   16500         7700            505          19600          9000             505
11   20550        10000           500          20980          9600            500
12   16500         7700            495          15800          7000             495
13   18600         6800            445          18600          7200             445

14   18600         7200            445          19000          7200             445
15   19000         7200            445          19000          6800             445
16   19000         6800            445          18600          6800             445
17   19400         7700            457          19400          8300             457
18   19400         8300            457          20000          8300             457
19   20000         8300            457          20000          7700             457
20   20000         7700            457          19400          7700             457
Temperature (deg celsius)
-25
/Relative Humidity %value (0 - 100)
20
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
26
/Neutral - No Wind
33.28
/Lapse - No Wind
5.2
/Neutral - Wind from Predominant Direction 1
19.2
/Neutral - Wind from Predominant Direction 2
11.52
/Lapse - Wind from Predominant Direction 1
3
/Lapse - Wind from Predominant Direction 2
1.8
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
18000    7000
```

Panda and Koala - Scenario 2 Input Data (Winter)

```
/Minimum Radial Distance from Receiver Origin
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1;  The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle  (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0       475
250     480
710     485
1000    505
2000    505
2100    495
200000  495
45
0       475
2900    475
3540    500
4000    510
4330    505
4520    500
5000    475
200000  475
90
0       475
3220    475
4100    500
200000  500
135
0       475
1700    475
3280    500
3900    500
4780    475
200000  475
180
0       475
2200    450
200000  450
225
0       475
```

Panda and Koala - Scenario 2 Input Data (Winter)

600	475
2800	450
3460	450
4640	425
6000	450
200000	450
270	
0	475
1640	475
2600	450
3600	450
4620	475
200000	475
315	
0	475
790	475
800	495
1800	495
1810	475
200000	475
359	
0	475
250	480
710	485
1000	505
2000	505
2100	495
200000	495

Misery - Scenario 1 Input Data (Summer)

This is the data used to input the initial stages of the Misery pit. The year modelled is 2000.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,100,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

SUMMER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-M1S
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Misery Pit Scenario 1 (2000) - Summer
/Metric or English (M/E)
M
/Number of Sources
12
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number   X          Y           Z     Comment
1       39300     59850     412,"Dump Road Grade d1"
2       39200     59600     442,"Dump Road Grade d2"
3       39450     59500     450,"Dump Road Grade d3"
4       39700     59600     450,"Dump Road Flat d4"
5       39950     59700     460,"Dump Road Grade d5"
6       40150     59750     460,"Dump Road Flat d6"
7       40400     59800     460,"Dump Road Flat d7"
8       40700     59850     460,"Dump Road Flat d8"
9       39300     59850     427,"Shovel in Pit"
10      39300     59850     427,"Loader in Pit"
11      40700     59850     460,"Cat at Rock Dump"
12      39300     59850     427,"Diesel Rotary Drill"
/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources
/No.   63     125    250    500    1000   2000   4000    N    E    S    W
1    122.5  126.4  118.3  118.4  116.8  115.1  113.3    0    0    0    0
2    119.5  123.4  115.3  115.4  113.8  112.1  110.3    0    0    0    0
3    119.5  123.4  115.3  115.4  113.8  112.1  110.3    0    0    0    0
4    113.8  114.8  111.8  112.8  111.8  108.8  106.8    0    0    0    0
5    119.5  123.4  115.3  115.4  113.8  112.1  110.3    0    0    0    0
6    113.8  114.8  111.8  112.8  111.8  108.8  106.8    0    0    0    0
7    113.8  114.8  111.8  112.8  111.8  108.8  106.8    0    0    0    0
8    116.8  117.8  114.8  115.8  114.8  111.8  109.8    0    0    0    0
9    114.8  115.8  112.8  113.8  112.8  109.8  107.8    0    0    0    0
10   109.0  112.0  106.0  110.0  106.0  106.0  104.0    0    0    0    0
11   117.2  120.2  114.2  118.2  114.2  114.2  112.2    0    0    0    0
12   117.4  120.4  114.4  118.4  114.4  114.4  112.4    0    0    0    0
/Number of Barriers
11
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)
/#    X1           Y1           Z1           X2           Y2           Z2
```

Misery - Scenario 1 Input Data (Summer)

1	39100	59500	450	39100	60100	450
2	39100	60100	450	39700	60100	450
3	39700	60100	450	39100	60100	450
4	39100	60100	450	39100	59500	450
5	39050	59400	460	40000	59400	460
6	40000	59400	460	41000	59950	460
7	38200	59900	433	38250	60300	480.6
8	38250	60300	480.6	38400	60700	450
9	42400	61200	460	42400	61500	460
10	40400	61900	455	40950	61950	475
11	40950	61950	475	41350	61900	455

```
Temperature (deg celsius)
12
/Relative Humidity %value (0 - 100)
35
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
12.5
/Neutral - No Wind
35.5
/Lapse - No Wind
10.4
/Neutral - Wind from Predominant Direction 1
20
/Neutral - Wind from Predominant Direction 2
12
/Lapse - Wind from Predominant Direction 1
6
/Lapse - Wind from Predominant Direction 2
3.6
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
40000    60000
/Minimum Radial Distance from Receiver Origin
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1;  The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle  (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9
```

Misery - Scenario 1 Input Data (Summer)

```
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0        450
400      425
550      425
1000     450
200000   450
45
0        450
400      425
900      425
2400     450
2700     460
200000   460
90
0        450
1000     425
1100     415
200000   415
135
0        450
200      450
870      425
950      415
200000   415
180
0        450
150      450
1230     425
1600     415
200000   415
225
0        450
970      450
1200     425
1500     425
1640     440
1900     425
2000     415
200000   415
270
0        450
600      450
800      455
910      460
1020     465
1350     465
1450     460
1700     455
1900     450
200000   450
315
0        450
200000   450
```

Misery - Scenario 1 Input Data (Summer)

```
359
0         450
400       425
550       425
1000      450
200000    450
```

Misery - Scenario 1 Input Data (Winter)

This is the data used to input the initial stages of the Misery pit. The year modelled is 2000.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,100,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

WINTER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-M1W
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Misery Pit Scenario 1 (2000) - Winter
/Metric or English (M/E)
M
/Number of Sources
12
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number   X          Y          Z    Comment
1       39300     59850     412,"Dump Road Grade d1"
2       39200     59600     442,"Dump Road Grade d2"
3       39450     59500     450,"Dump Road Grade d3"
4       39700     59600     450,"Dump Road Flat d4"
5       39950     59700     460,"Dump Road Grade d5"
6       40150     59750     460,"Dump Road Flat d6"
7       40400     59800     460,"Dump Road Flat d7"
8       40700     59850     460,"Dump Road Flat d8"
9       39300     59850     427,"Shovel in Pit"
10      39300     59850     427,"Loader in Pit"
11      40700     59850     460,"Cat at Rock Dump"
12      39300     59850     427,"Diesel Rotary Drill"
/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources
/No.   63     125    250    500    1000   2000   4000    N    E    S    W
1    122.5  126.4  118.3  118.4  116.8  115.1  113.3    0    0    0    0
2    119.5  123.4  115.3  115.4  113.8  112.1  110.3    0    0    0    0
3    119.5  123.4  115.3  115.4  113.8  112.1  110.3    0    0    0    0
4    113.8  114.8  111.8  112.8  111.8  108.8  106.8    0    0    0    0
5    119.5  123.4  115.3  115.4  113.8  112.1  110.3    0    0    0    0
6    113.8  114.8  111.8  112.8  111.8  108.8  106.8    0    0    0    0
7    113.8  114.8  111.8  112.8  111.8  108.8  106.8    0    0    0    0
8    116.8  117.8  114.8  115.8  114.8  111.8  109.8    0    0    0    0
9    114.8  115.8  112.8  113.8  112.8  109.8  107.8    0    0    0    0
10   109.0  112.0  106.0  110.0  106.0  106.0  104.0    0    0    0    0
11   117.2  120.2  114.2  118.2  114.2  114.2  112.2    0    0    0    0
12   117.4  120.4  114.4  118.4  114.4  114.4  112.4    0    0    0    0
/Number of Barriers
11
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)
/#    X1          Y1          Z1          X2          Y2          Z2
```

Misery - Scenario 1 Input Data (Winter)

1	39100	59500	450	39100	60100	450
2	39100	60100	450	39700	60100	450
3	39700	60100	450	39100	60100	450
4	39100	60100	450	39100	59500	450
5	39050	59400	460	40000	59400	460
6	40000	59400	460	41000	59950	460
7	38200	59900	433	38250	60300	480.6
8	38250	60300	480.6	38400	60700	450
9	42400	61200	460	42400	61500	460
10	40400	61900	455	40950	61950	475
11	40950	61950	475	41350	61900	455

Temperature (deg celsius)
-25
/Relative Humidity %value (0 - 100)
20
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
26
/Neutral - No Wind
33.28
/Lapse - No Wind
5.2
/Neutral - Wind from Predominant Direction 1
19.2
/Neutral - Wind from Predominant Direction 2
11.52
/Lapse - Wind from Predominant Direction 1
3
/Lapse - Wind from Predominant Direction 2
1.8
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
40000 60000
/Minimum Radial Distance from Receiver Origin
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1; The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9

Misery - Scenario 1 Input Data (Winter)

```
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0       450
400     425
550     425
1000    450
200000  450
45
0       450
400     425
900     425
2400    450
2700    460
200000  460
90
0       450
1000    425
1100    415
200000  415
135
0       450
200     450
870     425
950     415
200000  415
180
0       450
150     450
1230    425
1600    415
200000  415
225
0       450
970     450
1200    425
1500    425
1640    440
1900    425
2000    415
200000  415
270
0       450
600     450
800     455
910     460
1020    465
1350    465
1450    460
1700    455
1900    450
200000  450
315
0       450
200000  450
```

Misery - Scenario 1 Input Data (Winter)

```
359
0       450
400     425
550     425
1000    450
200000  450
```

Misery - Scenario 2 Input Data (Summer)

This is the data used to input the production stage of the Misery pit. The year modelled is 2002.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,100,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

SUMMER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-P2S
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Panda & Koala Pits Scenario 2 (2001) - Summer
/Metric or English (M/E)
M
/Number of Sources
45
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number   X           Y             Z     Comment
1        18000    6600     490,"Plant Building"
2        18000    6300     465,"Main Powerplant"
3        18060    6300     465,"Crusher"
4        16600    7750     490,"Panda Dump Road Flat d1"
5        17080    7870     490,"Panda Dump Road Flat d2"
6        17500    8100     490,"Panda Dump Road Flat d3"
7        17920    8240     490,"Panda Dump Road Flat d4"
8        18340    8200     490,"Panda Dump Road Flat d5"
9        18860    8100     490,"Panda Dump Road Flat d6"
10       19260    8020     467,"Panda Dump Road grade d7"
11       19960    8120     427,"Panda Dump Road grade d8"
12       18975    7050     442,"Koala Dump Road grade d1"
13       18850    7100     442,"Koala Dump Road grade d2"
14       18500    7125     460,"Koala Dump Road grade d3"
15       18240    7160     475,"Koala Dump Road grade d4"
16       17925    7060     485,"Koala Dump Road flat d5"
17       17600    7040     485,"Koala Dump Road grade d6"
18       17250    7010     495,"Koala Dump Road flat d7"
19       16920    6995     495,"Koala Dump Road flat d8"
20       16650    6990     495,"Koala Dump Road flat d9"
21       16250    6950     495,"Koala Dump Road flat d10"
22       15925    6930     495,"Koala Dump Road flat d11"
23       18140    6940     475,"Panda Ore Road Flat o1"
24       18240    7160     475,"Panda Ore Road Flat o2"
25       18400    7340     475,"Panda Ore Road Flat o3"
26       18620    7500     470,"Panda Ore Road Grade o4"
27       18860    7600     465,"Panda Ore Road Grade o5"
28       19100    7740     460,"Panda Ore Road Grade o6"
29       19340    7860     457,"Panda Ore Road Grade o7"
30       19500    8030     440,"Panda Ore Road Grade o8"
31       19660    8120     427,"Panda Ore Road Grade o9"
32       19800    8050     400,"Panda Ore Road Grade o10"
33       19900    8000     375,"Panda Ore Road Grade o11"
```

Misery - Scenario 2 Input Data (Summer)

```
34       19800    7900      350,"Panda Ore Road Grade o12"
35       19660    8120      427,"Panda Shovel in Pit"
36       19660    8120      427,"Panda Loader in Pit"
37       16600    7750      490,"Cat at Panda Rock Dump"
38       18000    6600      490,"Cat at plant"
39       18000    6600      490,"Loader at plant"
40       18000    6600      490,"Excavator at plant"
41       19660    8140      400,"Panda Diesel Rotary Drill"
42       18975    7050      442,"Koala Shovel in Pit"
43       18975    7050      442,"Koala Loader in Pit"
44       15925    6930      495,"Cat at Koala Rock Dump"
45       19660    8140      400,"Koala Diesel Rotary Drill"
/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources
/No.   63     125    250    500    1000   2000   4000     N     E     S     W
1     113    114    111    112    111    108    106      0     0     0     0
2     129.5  108.5  101.5  104.5  108.5  110.5  109.5    0     0     0     0
3     122.4  122.4  119.4  125.4  121.4  114.4  106.4    0     0     0     0
4     118.9  119.9  116.9  117.9  116.9  113.9  111.9    0     0     0     0
5     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
6     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
7     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
8     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
9     115.9  116.9  113.9  114.9  113.9  110.9  108.9    0     0     0     0
10    121.6  125.5  117.4  117.5  115.9  114.2  112.4    0     0     0     0
11    124.6  128.5  120.4  120.5  118.9  117.2  115.4    0     0     0     0
12     83.4   87.3   79.2   79.3   77.7   76.0   74.2    0     0     0     0
13     80.4   84.3   76.2   76.3   74.7   73.0   71.2    0     0     0     0
14     80.4   84.3   76.2   76.3   74.7   73.0   71.2    0     0     0     0
15     80.4   84.3   76.2   76.3   74.7   73.0   71.2    0     0     0     0
16     74.7   75.7   72.7   73.7   72.7   69.7   67.7    0     0     0     0
17     80.4   84.3   76.2   76.3   74.7   73.0   71.2    0     0     0     0
18     74.7   75.7   72.7   73.7   72.7   69.7   67.7    0     0     0     0
19     74.7   75.7   72.7   73.7   72.7   69.7   67.7    0     0     0     0
20     74.7   75.7   72.7   73.7   72.7   69.7   67.7    0     0     0     0
21     74.7   75.7   72.7   73.7   72.7   69.7   67.7    0     0     0     0
22     77.7   78.7   75.7   76.7   75.7   72.7   70.7    0     0     0     0
23    111.4  112.4  109.4  110.4  109.4  106.4  104.4    0     0     0     0
24    108.4  109.4  106.4  107.4  106.4  103.4  101.4    0     0     0     0
25    108.4  109.4  106.4  107.4  106.4  103.4  101.4    0     0     0     0
26    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
27    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
28    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
29    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
30    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
31    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
32    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
33    114.1  118.0  109.9  110.0  108.4  106.7  104.9    0     0     0     0
34    117.1  121.0  112.9  113.0  111.4  109.7  107.9    0     0     0     0
35    113.9  114.9  111.9  112.9  111.9  108.9  106.9    0     0     0     0
36    111.3  114.3  112.3  108.3  111.3  111.3  101.3    0     0     0     0
37    119.2  122.2  116.2  120.2  116.2  116.2  114.2    0     0     0     0
38    108.4  111.4  105.4  109.4  105.4  105.4  103.4    0     0     0     0
39    102.4  105.4  103.4   99.4  102.4  102.4   92.4    0     0     0     0
40    112.5  114.5  109.5  106.5  106.5  101.5   97.5    0     0     0     0
41    114.6  117.6  111.6  115.6  111.6  111.6  109.6    0     0     0     0
42    112.7  113.7  110.7  111.7  110.7  107.7  105.7    0     0     0     0
```

Misery - Scenario 2 Input Data (Summer)

```
43   101.9  104.9  102.9   98.9  101.9  101.9   91.9    0     0     0     0
44   118.8  121.8  115.8  119.8  115.8  115.8  113.8    0     0     0     0
45   114.3  117.3  111.3  115.3  111.3  111.3  109.3    0     0     0     0
/Number of Barriers
20
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)
/#    X1          Y1          Z1          X2          Y2          Z2
1    19000       7950        505        19000        9600        505
2    16860       8550        490        17080        8600        498
3    17080       8600        498        17300        8600        490
4    17200       8200        497        17340        8260        497
5    17300       8500        497        17600        8600        497
6    17020       7450        504        17200        7450        504
7    20000       3800        505        21100        5240        505
8    23800       7900        505        23800        8100        505
9    22700       7600        500        22700        7800        500
10   16500       7700        505        19600        9000        505
11   20550      10000        500       20980        9600        500
12   16500       7700        495        15800        7000        495
13   18600       6800        445        18600        7200        445

14   18600       7200        445        19000        7200        445
15   19000       7200        445        19000        6800        445
16   19000       6800        445        18600        6800        445
17   19400       7700        457        19400        8300        457
18   19400       8300        457        20000        8300        457
19   20000       8300        457        20000        7700        457
20   20000       7700        457        19400        7700        457
Temperature (deg celsius)
12
/Relative Humidity %value (0 - 100)
35
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
12.5
/Neutral - No Wind
35.5
/Lapse - No Wind
10.4
/Neutral - Wind from Predominant Direction 1
20
/Neutral - Wind from Predominant Direction 2
12
/Lapse - Wind from Predominant Direction 1
6
/Lapse - Wind from Predominant Direction 2
3.6
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
18000    7000
/Minimum Radial Distance from Receiver Origin
```

Misery - Scenario 2 Input Data (Summer)

```
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1;  The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle  (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0       475
250     480
710     485
1000    505
2000    505
2100    495
200000  495
45
0       475
2900    475
3540    500
4000    510
4330    505
4520    500
5000    475
200000  475
90
0       475
3220    475
4100    500
200000  500
135
0       475
1700    475
3280    500
3900    500
4780    475
200000  475
180
0       475
2200    450
200000  450
225
0       475
600     475
```

Misery - Scenario 2 Input Data (Summer)

```
2800    450
3460    450
4640    425
6000    450
200000  450
270
0       475
1640    475
2600    450
3600    450
4620    475
200000  475
315
0       475
790     475
800     495
1800    495
1810    475
200000  475
359
0       475
250     480
710     485
1000    505
2000    505
2100    495
200000  495
```

Misery - Senario 2 Input Data (Winter)

This is the data used to input the production stage of the Misery pit. The year modelled is 2002.

Note: The X, Y and Z coordinates are in metres. The X coordinates require N500,000 to be added to obtain standard coordinates. The Y coordinates require E7,100,000 to be added to obtain standard coordinates. The Z coordinates require no correction.

This data is for:

WINTER

This is a file for the input to SOUNDMDL

```
/Output File Name (No Extension)
NWTD-P2W
/Replace File or Append (R/A)
R
/Identifier
NWT Diamonds - Panda & Koala Pits Scenario 2 (2001) - Winter
/Metric or English (M/E)
M
/Number of Sources
45
/Source Coordinates, (input exact # of lines to match Number of Sources)
/Number    X            Y            Z     Comment
1        18000     6600     490,"Plant Building"
2        18000     6300     465,"Main Powerplant"
3        18060     6300     465,"Crusher"
4        16600     7750     490,"Panda Dump Road Flat d1"
5        17080     7870     490,"Panda Dump Road Flat d2"
6        17500     8100     490,"Panda Dump Road Flat d3"
7        17920     8240     490,"Panda Dump Road Flat d4"
8        18340     8200     490,"Panda Dump Road Flat d5"
9        18860     8100     490,"Panda Dump Road Flat d6"
10       19260     8020     467,"Panda Dump Road grade d7"
11       19960     8120     427,"Panda Dump Road grade d8"
12       18975     7050     442,"Koala Dump Road grade d1"
13       18850     7100     442,"Koala Dump Road grade d2"
14       18500     7125     460,"Koala Dump Road grade d3"
15       18240     7160     475,"Koala Dump Road grade d4"
16       17925     7060     485,"Koala Dump Road flat d5"
17       17600     7040     485,"Koala Dump Road grade d6"
18       17250     7010     495,"Koala Dump Road flat d7"
19       16920     6995     495,"Koala Dump Road flat d8"
20       16650     6990     495,"Koala Dump Road flat d9"
21       16250     6950     495,"Koala Dump Road flat d10"
22       15925     6930     495,"Koala Dump Road flat d11"
23       18140     6940     475,"Panda Ore Road Flat o1"
24       18240     7160     475,"Panda Ore Road Flat o2"
25       18400     7340     475,"Panda Ore Road Flat o3"
26       18620     7500     470,"Panda Ore Road Grade o4"
27       18860     7600     465,"Panda Ore Road Grade o5"
28       19100     7740     460,"Panda Ore Road Grade o6"
29       19340     7860     457,"Panda Ore Road Grade o7"
30       19500     8030     440,"Panda Ore Road Grade o8"
31       19660     8120     427,"Panda Ore Road Grade o9"
32       19800     8050     400,"Panda Ore Road Grade o10"
33       19900     8000     375,"Panda Ore Road Grade o11"
```

Misery - Senario 2 Input Data (Winter)

```
34      19800    7900     350,"Panda Ore Road Grade o12"
35      19660    8120     427,"Panda Shovel in Pit"
36      19660    8120     427,"Panda Loader in Pit"
37      16600    7750     490,"Cat at Panda Rock Dump"
38      18000    6600     490,"Cat at plant"
39      18000    6600     490,"Loader at plant"
40      18000    6600     490,"Excavator at plant"
41      19660    8140     400,"Panda Diesel Rotary Drill"
42      18975    7050     442,"Koala Shovel in Pit"
43      18975    7050     442,"Koala Loader in Pit"
44      15925    6930     495,"Cat at Koala Rock Dump"
45      19660    8140     400,"Koala Diesel Rotary Drill"
/Elevation of source above grade (average if more than one source)
5
/Source Sound Power Levels and Directivities (NESW)
/input exact number of lines to match Number of Sources
```

/No.	63	125	250	500	1000	2000	4000	N	E	S	W
1	113	114	111	112	111	108	106	0	0	0	0
2	129.5	108.5	101.5	104.5	108.5	110.5	109.5	0	0	0	0
3	122.4	122.4	119.4	125.4	121.4	114.4	106.4	0	0	0	0
4	118.9	119.9	116.9	117.9	116.9	113.9	111.9	0	0	0	0
5	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
6	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
7	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
8	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
9	115.9	116.9	113.9	114.9	113.9	110.9	108.9	0	0	0	0
10	121.6	125.5	117.4	117.5	115.9	114.2	112.4	0	0	0	0
11	124.6	128.5	120.4	120.5	118.9	117.2	115.4	0	0	0	0
12	83.4	87.3	79.2	79.3	77.7	76.0	74.2	0	0	0	0
13	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
14	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
15	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
16	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
17	80.4	84.3	76.2	76.3	74.7	73.0	71.2	0	0	0	0
18	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
19	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
20	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
21	74.7	75.7	72.7	73.7	72.7	69.7	67.7	0	0	0	0
22	77.7	78.7	75.7	76.7	75.7	72.7	70.7	0	0	0	0
23	111.4	112.4	109.4	110.4	109.4	106.4	104.4	0	0	0	0
24	108.4	109.4	106.4	107.4	106.4	103.4	101.4	0	0	0	0
25	108.4	109.4	106.4	107.4	106.4	103.4	101.4	0	0	0	0
26	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
27	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
28	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
29	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
30	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
31	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
32	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
33	114.1	118.0	109.9	110.0	108.4	106.7	104.9	0	0	0	0
34	117.1	121.0	112.9	113.0	111.4	109.7	107.9	0	0	0	0
35	113.9	114.9	111.9	112.9	111.9	108.9	106.9	0	0	0	0
36	111.3	114.3	112.3	108.3	111.3	111.3	101.3	0	0	0	0
37	119.2	122.2	116.2	120.2	116.2	116.2	114.2	0	0	0	0
38	108.4	111.4	105.4	109.4	105.4	105.4	103.4	0	0	0	0
39	102.4	105.4	103.4	99.4	102.4	102.4	92.4	0	0	0	0
40	112.5	114.5	109.5	106.5	106.5	101.5	97.5	0	0	0	0
41	114.6	117.6	111.6	115.6	111.6	111.6	109.6	0	0	0	0
42	112.7	113.7	110.7	111.7	110.7	107.7	105.7	0	0	0	0

Misery - Senario 2 Input Data (Winter)

```
43   101.9  104.9  102.9   98.9  101.9  101.9   91.9    0     0     0     0
44   118.8  121.8  115.8  119.8  115.8  115.8  113.8    0     0     0     0
45   114.3  117.3  111.3  115.3  111.3  111.3  109.3    0     0     0     0
/Number of Barriers
20
/Barrier Coordinates, (input exact # of lines to match Number of Barriers)
/#    X1           Y1            Z1            X2            Y2            Z2
1    19000        7950          505          19000          9600          505
2    16860        8550          490          17080          8600          498
3    17080        8600          498          17300          8600          490
4    17200        8200          497          17340          8260          497
5    17300        8500          497          17600          8600          497
6    17020        7450          504          17200          7450          504
7    20000        3800          505          21100          5240          505
8    23800        7900          505          23800          8100          505
9    22700        7600          500          22700          7800          500
10   16500        7700          505          19600          9000          505
11   20550       10000          500         20980          9600          500
12   16500        7700          495          15800          7000          495
13   18600        6800          445          18600          7200          445

14   18600        7200          445          19000          7200          445
15   19000        7200          445          19000          6800          445
16   19000        6800          445          18600          6800          445
17   19400        7700          457          19400          8300          457
18   19400        8300          457          20000          8300          457
19   20000        8300          457          20000          7700          457
20   20000        7700          457          19400          7700          457
Temperature (deg celsius)
-25
/Relative Humidity %value (0 - 100)
20
/Wind - Predominant Bearing (From)
110
/Wind - Second Predominant Bearing (From)
315
/Environmental Conditions (enter 0 for % if they don't exist or are insignificant
/Sum of percentage should add up to 100% (including % wind >15 Kmh)
/Percentage of Time Wind Exceeds 15 Kmh
41
/Inversion
26
/Neutral - No Wind
33.28
/Lapse - No Wind
5.2
/Neutral - Wind from Predominant Direction 1
19.2
/Neutral - Wind from Predominant Direction 2
11.52
/Lapse - Wind from Predominant Direction 1
3
/Lapse - Wind from Predominant Direction 2
1.8
/Minimum Sound Level of Concern (dBA)
25
/Radial Receiver Origin - X and Y
18000    7000
/Minimum Radial Distance from Receiver Origin
```

Misery - Senario 2 Input Data (Winter)

```
1000
/Maximum Radial Distance from Receiver Origin
20000
/Receiver Height above grade
1.5
/Radial Step Multiplier (>1;  The smaller the multiplier the more refined
/the data, however, the longer the program runs
1.015
/Radial Starting Angle  (North=0)
0
/Radial Finishing Angle (Runs Clockwise Max 359; Must be larger than start)
359
/Radial angle step
3
/Receiver Profiles
/Number of Profiles (max 10)
9
/For each profile input Profile Bearing, Then pairs of Radial Dist, Elev
/Start each with Radial Dist of 0 and finish each with Radial Dist of 200000.
/The max radial entries per profile is 50.  The profile bearings must increase
/The profile range must bracket the radial sweep, If you are doing a
/complete sweep, the 1st profile should be bearing 0 and the last bearing 359
/They can contain identical data.
0
0       475
250     480
710     485
1000    505
2000    505
2100    495
200000  495
45
0       475
2900    475
3540    500
4000    510
4330    505
4520    500
5000    475
200000  475
90
0       475
3220    475
4100    500
200000  500
135
0       475
1700    475
3280    500
3900    500
4780    475
200000  475
180
0       475
2200    450
200000  450
225
0       475
600     475
```

Misery - Senario 2 Input Data (Winter)

2800	450
3460	450
4640	425
6000	450
200000	450
270	
0	475
1640	475
2600	450
3600	450
4620	475
200000	475
315	
0	475
790	475
800	495
1800	495
1810	475
200000	475
359	
0	475
250	480
710	485
1000	505
2000	505
2100	495
200000	495