

# **Okanagan Timber Supply Area**

## **Vegetation Resources Inventory**

**Project Implementation Plan  
Photo Interpretation  
Revised for 2005 - 2007**

**PREPARED BY:**

**OKANAGAN INNOVATIVE FORESTRY SOCIETY**

**NOVEMBER 2005**

## EXECUTIVE SUMMARY

The Okanagan TSA 's Forest Inventory is 25 to 35 years old. Land use, fires and now insects, such as the Mountain Pine Beetle are outdating the usefulness of this inventory.

This Vegetation Resources Inventory (VRI) Project Implementation Plan (VPIP) outlines the VRI activities and products that will address forest management and inventory issues in the Okanagan Timber Supply Area (TSA 22). The lead stakeholders for this project include the Okanagan Innovative Forestry Society (OIFS), which includes, Tolko Industries Ltd., Weyerhaeuser Canada, Gorman Bros. Lumber Ltd., Federated Co-op Ltd., Louisiana-Pacific Ltd. Bell Pole Ltd. and British Columbia Timber Sales, and the Ministry of Forests and Range.

The following VRI activities and products are planned for 2005 and 2006:

1. Conduct a Phase I photo-interpretation (VRI) over the Okanagan TSA focusing on the areas where Lodgepole pine is a minor species (ie Northern wet belt, central Douglas Fir leading stands in the dry belt). The Phase I database will support timber-emphasis inventories, habitat mapping, ecosystem mapping, riparian mapping, and other applications. During the Phase 1 VRI field calibration program emphasis will be placed to improve species composition descriptions, stand heights, age estimates and the spatial data for all stands. A list of maps planned for reinventory can be found in Appendix 1
2. Prepare a separate monitoring implementation plan for Lodgepole pine in mixed stands so that a calibration of the surviving lodgepole pine can be used to adjust the inventory in 2015 following the wave of Mountain Pine Beetle affects most if not all Lodgepole pine in the forest. This document will not address this program.

These VRI activities and products will support timber supply objectives and other resource specific interpretations. They may be implemented in smaller units (e.g., Management Zones) across the TSA. Further assessment of any VRI Ground Sampling needs will be determined after this VRI Phase 1 Inventory is completed.

## Executive Summary

### Table of Contents

<b>1. Introduction.....</b>	<b>4</b>
1.1 BACKGROUND INFORMATION.....	4
1.1.1VRI Overview.....	4
1.1.2VRI Planning.....	5
1.2 DOCUMENT OBJECTIVES.....	6
1.3 Current Forest Cover Inventory	6
1.4 <i>LANDBASE</i> .....	7
<b>2. Photo Interpretation Plan.....</b>	<b>8</b>
2.1 Project Objectives.....	8
2.2 Target Area.....	9
2.3 Initial Delineation (Pre-Strat).....	9
2.4 MoFR VRI : Requirements for VRI data collected for Silviculture Openings .....	11
2.5 CALIBRATION DATA SOURCES .....	11
2.6 FIELD CALIBRATION: FIELD WORK.....	11
2.7 Final Attribute Estimation.....	12
2.8....Digital Products.....	12
2.9....Additional Products to Deliver to MoFR.....	12
2.10 Quality Assurance.....	12
<b>3. Project Implementation</b>	<b>14</b>
3.1 <i>SCHEDULING</i> .....	15
3.2 PROJECT COORDINATOR.....	15
<b>4. Estimation of Funding Requirements.....</b>	<b>14</b>
<b>5.. Reference Material.....</b>	<b>15</b>
<b>6. APPROVAL/SIGN-OFF OF VPIP.....</b>	<b>16</b>
 Appendix 1: List of Okanagan TSA Maps.....	 17

# 1. INTRODUCTION

## 1.1 Background

The current Okanagan TSA's base Inventory is primarily data from portions of 11 different PSYU, Unit Survey Inventories from the 1960's to 1970's. An accurate forest inventory is an important tool for operational planning, timber supply analysis and meeting 3<sup>rd</sup> party certification objectives.

This Vegetation Resources Inventory (VRI) Project Implementation Plan (VPIP) outlines VRI activities and products needed to address forest management and inventory issues in the Okanagan Timber Supply Area (TSA 22). In the past 2 years, 12 mapsheets have been completed to VRI Standards and there is a need to complete the entire TSA, specifically for operational planning because of emerging issues such as the MPB epidemic. This VPIP provides updated details for VRI Phase 1 photo interpretation and digital mapping for the Okanagan TSA. It is the intention of the OIFS to complete the photo interpretation of the TSA in phases. This document primarily addresses the completion of 101 (see Appendix 1) maps in areas where Lodgepole pine is a minor species; although additional mapping may be completed if funding permits.

The Okanagan VRI Committee is comprised of participants operating within the Okanagan Timber Supply Area, including Tolko Industries Ltd., Weyerhaeuser Canada, Gorman Bros. Lumber Ltd., Federated Co-op Ltd., Louisiana-Pacific Ltd., Bell Pole Ltd., British Columbia Timber Sales, and Ministry of Forests.

### 1.1.1 VRI Overview

The VRI is a two phased vegetation inventory process, approved by the Resources Inventory Committee (RIC) to assess the quantity and quality of BC's timber and vegetation resources. The VRI estimates overall population totals and averages, as well as individual polygon attributes, for timber and non-timber resources. Its design is simple, efficient, statistically defensible, and addresses issues raised by the Forest Resources Commission in its 1991 report, *The Future of Our Forests*, including:

1. Lack of statements of precision of the inventory.
2. Inadequate information on non-timber vegetation resources.
3. Lack of reliable estimates of growth rates and stand specific volumes.
4. Narrow focus on commercial timber volume and the timber harvesting land base.

The VRI consists of several components:

1. Derived BC Land Cover Classification Scheme (BCLCS).
2. Photo Interpreted Estimates (Phase I).

3. Ground Sampling (Phase II) – timber emphasis, ecology, coarse woody debris.
4. Net Volume Adjustment Factor (NVAF) sampling.
5. Within Polygon Variation (WPV) sampling.
6. Statistical Adjustment.

One or more of these components can address specific forest management or inventory issues. For more information, VRI manuals are available through the internet at <http://srmwww.gov.bc.ca/risc/pubs/teveg/index.htm>.

### **1.1.2 VRI Planning**

The VRI planning process requires that a Strategic Inventory Plan (VSIP) and one or more Project Implementation Plans (VPIP) are developed for defined units (e.g. TSA, TFL). A VSIP outlines VRI products to address forest management issues and provides strategic direction for implementing the inventory activities. A VPIP details the operational activities identified in the VSIP (e.g., ground sampling or photo interpretation projects) and identifies stakeholders, specific project objectives, project areas, priorities, plot location, yearly inventory costs, scheduling deliverables, roles and responsibilities and stakeholder sign-off.

The VRI planning process is an important component of the overall VRI process and related activities. The intent of the VRI planning process is to ensure that baseline products meet a range of applications and they are efficiently implemented. These processes and activities include:

1. Forest management decision processes (land integration planning)
2. Identifying forest management issues
3. VRI Strategic planning (prepare a VSIP)
4. VRI operational planning (prepare VPIPs)
5. Implementation, including development and maintenance of procedures and standards;
  - a). Management inventories
  - b). Database management
  - c). Data interpretation

For more information, guidelines for preparing VPIPs are available on the Internet at <http://srmwww.gov.bc.ca/tib/fia/vri.htm>.

The steps for preparing a VPIP include:

1. Review and update VSIP recommendations
2. Secure funding
3. Identify project activities, geographic areas, and costs
4. Specify roles and responsibilities for project implementation
5. Prepare VPIP
6. Signed off by Licensee representative, MOF Designated (Region and Branch) staff and in the case where there is new photo acquisition, Base Mapping Geomatic Services (BMGS).

## **1.2 Document Objectives**

The objective of this VPIP is to outline and describe the VRI Phase 1 activities to be completed within the Okanagan TSA. It provides some basic landbase information, some background information from the previous Annual Allowable Cut Rational document (pre-2002), and it outlines the implementation plan for the field sampling.

The focus of this project is to collect standard VRI Photo Estimation data, utilizing pre-delineated bioterrain polygons as a basis for polygon delineation and attributing.

The contractor will also conduct air call and ground call calibration sampling for use in the ensuing field season. Localized cruise data summaries were also collected in 2002/03 in order to maximize the use of local data that has been completed throughout the Okanagan. This data is summarized in IGDS and MS Access for the attribute phase of the VRI where it can be used as calibration information to accompany any completed air and ground calls.

When the VRI is complete, the Okanagan TSA will benefit from the VRI by:

1. VRI and PEM polygons that are tightly integrated, having both been both developed from the same initial bioterrain map base. Management interpretations of ecosystems and vegetation types will be simplified and improved.
2. More cost effective VRI by using the bioterrain polygons for initial delineation.
3. Seamless VRI coverage of the entire Okanagan TSA - including parks and private lands. TFL's 15 and 49 have already been completed to VRI standards (when all mapsheets are finally complete).
4. Improved estimates of VRI stand attributes through the use of existing, local, and timber cruise data.

## **1.3 Current Forest Cover Inventory**

The Okanagan TSA was last inventoried from 1962-1979, over portions of 11 different Public Sustained Yield Units (PSYU's). The inventory has been forest cover depletion updated to February 2004, using the 2001/02 1:30,000 colour photos to account for harvesting disturbances, growth, and silviculture treatments. Since 2002, 12 mapsheets have been re-inventoried to VRI standards utilizing 2001 1:30,000 color aerial photography with softcopy technology and bioterrain delineation as a base for the VRI.

The forest industry has collated the denuded stands through forest harvesting to December 2004 and this information has been used as a base for the Okanagan Shuswap Urgent Timber Supply uplift for Mountain pine Beetle determination expected in October 2005.

The forest industry has collected tree measurements of approximately 10,000 ages and heights gathered from industry operational cruise plots for the period 1996 – 2003. Such information will be used for calibration of Phase 1 classification.

The MOF initiated a forest inventory audit that was completed in 1996. The audit reviewed tree height, age and volume for forest stands greater than 60 years old. It also reviewed height, age and productivity for immature stands as well as an assessment of non forest types. Audit results showed that audit and inventory volumes were 299 m<sup>3</sup>/ha and 293 m<sup>3</sup>/ha respectively. While the audit indicated that volumes were still consistent with the original inventory, the 1996 PIA (Pre-Inventory Analysis) conducted by the MOF Inventory – Kamloops, indicated that there are problems with species composition, ages and height depending on location in the TSA and that a re-inventory was warranted because of the age of the inventory and its use for other than volume determination.

### 1.4 Landbase

The jurisdiction of the Okanagan TSA covers 1,945,037 ha of land (Table 1). The main tree species in the forested landbase (Table 2) are lodgepole pine (29%), Douglas fir (28%), balsam (13%), and spruce (12%). In this report, we assume that the forested landbase corresponds to the Vegetated Treed (VT) landbase (BC Land cover Classification Scheme, or BCLCS).

Table 1. Landbase by forest cover.<sup>1</sup>

	Area (ha)	%
Forested	1,945,036	100
Mature	994,465	51.1
Immature	765,028	39.3
NSR	70,263	3.6
Non commercial	9,563	0.5
Non productive	105,717	5.4
<i>Grand Total</i>	1, 945,037	100

Table 2. Forested landbase by species

Leading Species	Area (ha)	%
Balsam	259,454	13%
Cedar	86,422	4%
Deciduous	67,741	3%
Douglas Fir	539,953	28%
Larch	49,811	3%
Hemlock	81,945	4%
Lodgepole Pine	564,290	29%
Spruce	237,089	12%
Yellow Pine	58,332	3%
<b>Grand Total</b>	<b>1,945,037</b>	<b>100%</b>

\* cottonwood, aspen, birch

Appendix 1: List of Okanagan TSA Maps.

<sup>1</sup> Data from IFPA Uplift Data Analysis Set (2004)

## 2 PHOTO INTERPRETATION PLAN

Twelve maps have been completed to VRI Standards using 2001 1:30,000 colour photo in softcopy format. Although larger scale photos are preferred for VRI, these current photos are in place and are considered acceptable to 2006.

### 2.1 Project Objectives

The VRI product is a spatial database consisting of unadjusted photo-interpreted estimates. The focus of this project is to collect standard VRI Photo Estimation data, utilizing pre-delineated bioterrain polygons as a basis for polygon delineation and attributing. Bioterrain mapping has been previously completed in the central (82L mapsheets) and in the southern (82E mapsheets) portions of the TSA and will continue this fiscal year, to complete the 82M mapsheets to the northern extremity of the TSA. JMJ Holdings Ltd. of Nelson BC will be continuing to complete the bioterrain mapping as part of their separate PEM project. JMJ will have bioterrain features delineated on DiAP models using DiAP viewer and softcopy technology on 2002 1:30000 colour digital photography. The VRI contractor will delineate and interpret VRI polygons, using bioterrain polygons as an initial stratification. **The bioterrain delineation will be corrected / adjusted where necessary to conform to VRI Standards.**

The objective is to improve TSA polygon information – as stated in the Okanagan TSA VSIP to address what is perceived as deficiencies in the inventory, (listed below); in areas where specific management issues occur – using photo interpretation.

All VRI Phase 1 Photo Interpretation Standards will be followed.

- Age of the existing inventory. Needs to be brought to VRI Standards.
- Accuracy of forest-cover labels and spatial accuracy of stands. Species composition descriptions are inaccurate, especially in stands managed through the selection system. Check and update species composition labels for deciduous and deciduous-coniferous mixed stands
- Pest infestations (particularly now with MPB) contribute to stand variability, makes inventory update for depletion difficult, and leads to poor inventory projections. Assessment of need to establish more P2 samples in MPB areas needs to be determined.
- Where practical, MPB salvage and other and other related logging history that left many groups of small patches, that are not captured in inventory update.
- Polygon resolution is inadequate – individual polygon areas are large.
- The IDF stands are highly variable, making it difficult to project stand volume using existing models. Additional inventory attributes need to be collected to more accurately project the stand growth and



to help select or define appropriate silviculture treatments for these stands. As well, smaller Phase 1 polygons with less variation are needed to help develop management guidelines.

- Overestimation of stand ages (i.e. FDi)

Quantify non-recoverable (gross) losses from wind throw, insects and disease

- Check regenerated stand volume estimates from TIPSY models
- Silviculture history and free growing information requires significant improvement
- Operability line delineation
- Park inventories. Okanagan Mountain and Cathedral (completed 1996) Parks are not included.
- Certification
- A Cedar/ hemlock Phase 2 VRI was completed in 2002. This should be reviewed before any more VRI plots are established in cedar hemlock stands.

**Note: Not all of these issues can be addressed alone, but can only be achieved in concert with a Phase 2 VRI. The existing VRI Phase 2 Ground Sample data base will have to be revisited once the Phase 1 VRI is complete.**

## 2.2 Target Area

The entire TSA will be re-inventoried to VRI standards. Woodlots, parks (except Cathedral and Okanagan Mtn) and protected areas will also be included. These additional areas may already have recent VRI's completed and will not be re-inventoried without formal consultation with the appropriate persons. These re-inventoried areas will be maintained and incorporated into the new VRI base.

This project will focus on the delineation and interpretation of standard VRI polygons, using the bioterrain polygons as an initial stratification.

In addition field sampling of the target mapsheets will be completed with ground call and air call work., as available funding will permit.

## 2.3 Initial Delineation

The bioterrain polygons delineated by geoscience experts under a separate contract will provide the foundation for all of the VRI polygons. It is expected that the bioterrain specialists will delineate an average of 1200 - 1800 polygons per map sheet. These polygons must meet VRI Standards to be retained in the subsequent VRI delineations or as a separate layer to maintain their Bioterrain Standards. The VRI specialists will then further sub-delineate or revise / replace the bioterrain polygons into appropriate VRI polygons (ie: specifically around openings, revising lines to VRI standards, etc.), maintaining an average final bioterrain / VRI polygon size of 10 ha.

(approximately 1400 to 1600 polygons/map sheets are expected based on the overall landscape, existing anthropogenic fragmentation, and vegetation diversity of the project area). Using the bioterrain delineation as a base for all VRI polygons is anticipated to create significant cost and time efficiencies for VRI interpreters. The delineation of polygons will meet all VRI standards and will be based on the B.C. Land Cover Classification Scheme. To ensure continuity with VRI standards, the interpreters will:

- delineate areas of homogeneous vegetated and non-vegetated complexes that will provide the spatial location of polygons within the geographic landscape. Complexes will be based upon distinct, significant, and observable differences visible on the softcopy imagery according to defined criteria briefly discussed below and in Vegetation Resources Inventory Photo Interpretation Procedures Version 2.4 (March 2002);
- minimize stand variation within a polygon, thereby facilitating a meaningful photo interpretation of vegetation inventory attributes; and
- ensure minimum polygon sizes are no less than 0.5ha and no narrower than 40 meters in width. Generally the minimum polygon size will conform to VRI Standards for forest and non-forest lands.

All lands within the project area will be delineated to VRI standards. Exceptions to this will be the following:

- the interpreters will delineate the external boundaries for silviculture openings that have not obtained free to grow status. All internal boundaries will be maintained exactly as per the existing VRI files, unless otherwise directed. The most up to date silvicultural data available will be incorporated into the new Veg. Files.
- the exterior boundary and location of new roads and new landings will be mapped; and
- the OIFS may provide information from their silviculture system to be included in this project as an update to the date of the imagery provided.

Further VRI delineation will proceed based on the following criteria,

- delineate vegetated versus non-vegetated;
- delineate treed versus non-treed;
- treed; delineate wetland versus upland;
- non-treed; delineate shrub versus herb;
- treed polygons subdivided by distinct observable changes in;
- age;

- height;
- species composition;
- crown closure;
- stand structure; and
- history.

All delineation will be quality control checked and audited to ensure adherence to the objectives of the OIFS and MoFR VRI Standards.

## **2.4 MoFR VRI: Requirements for VRI data collected for Silviculture Openings.**

1. Retain existing opening numbers and provide VRI attributes for the largest polygon of the Silviculture opening (based on VRI source files). If opening numbers are not in the VRI source files, then obtain the opening numbers from the RESULTS spatial file. MoF VRI Update section will provide access to the RESULTS data as required.
2. Add new openings that are not in the VRI source files, obtain the opening number from RESULTS and provide full VRI attributes. Additional internal stratification and attribution is not required.
3. Internal stratification of openings is required where an opening has been declared Free Growing in RESULTS (Opening Category =FG). Each polygon requires full attribution plus the designation “FTG” in the VegCap polygon record Project field.
4. Any polygons from the VRI source files that have “FTG” in the project field must be re-interpreted to VRI standards and the FTG designation retained.

## **2.5 Calibration Data Sources**

Calibration Data sources are reference points established across the land base as ground calls, air calls, formal (with measurements) and informal (without measurement); used to collect field data measurements to assist in the delineation and classification of selected forest types. Previous (historical) data sources from earlier inventories, pre inventory assessments, cruise data, etc.; if available, will be reviewed and considered for their potential to be added as reference points.

There are approximately 10,000 compiled cruise plots (for the period 1996 - 2003 and another 4000 expected to be compiled for 2003 – 2005 by January 2006) that can add to the data sources available. Before commencing any fieldwork, these data sources need to be considered, so that the most efficient use can be made of fieldwork.

## 2.6: Field Calibration: Field Work

The same VRI personnel involved with pre-delineation will complete field visitation. The importance of calibration point (reference point) placement cannot be overstated. The same can be said for the proper distribution and intensity of calibration points planned for an inventory. All of these are even more critical when the objective of the inventory is to meet operational requirements, as is the case with the OIFS VRI. The Aug. 12, 2003 VRI Test Sheets Okanagan TSA Project Plan recommended higher than MoFR standard polygon visitation intensity. (Table 3). While there is no MoFR Standard for numbers of calibration point per map, higher than traditional numbers of 10 ground calls and 10 air calls per map are recommended.

A series of formal field calibration points (reference points), both ground calls and air calls will be developed (field sample plan) and all appropriate data to VRI Standards will be collected and used to assist certified photo interpreters in attribute estimation. Informal data points between formal calls are also recommended to assist in polygon classification. Data collection normally occurs in polygons that do not have any previous source information or in polygons where the source information is questionable or dated. The existing base of ground calls and air calls from the 60's and 70's is quit dated, so it is very important to acquire new data points in the most appropriate areas to assist with attribute estimation. The location of calibration points will be such that there is a variety of cover types visited including vegetated treed, non treed, and non-vegetated polygons, with an obvious focus on the vegetated treed land base.

Table 3: Summary of Proposed Calibration Point Intensity by mapsheet.

Calibration Plot Type	Per Map Sheet (avg.)
3 point Formal Ground Calls	10
Single Point Formal Ground Call (with measurements)	15
Air Call	40
Informal Ground and Air Calls	20

**The Standard for VRI Ground calls is 3 point calls**, but single point calls allow greater diversity in locations and is a critical consideration as is the proposed number of calibration points per map. Where appropriate (ie. dry belt and other complex species types) 3 point ground calls must be used. All of this is subject to available funding, which will ultimately determine numbers of calibration data points.

Please refer to the following;

- VRI Air Calibration Data Collection Procedures and Standards (2003);
- VRI Ground Calibration Data Collection Procedures and Standards (2003);

Or, use the following links:

- [http://srmwww.gov.bc.ca/risc/pubs/teveg/aircalibration2k3/air\\_call\\_procedures2k3.pdf](http://srmwww.gov.bc.ca/risc/pubs/teveg/aircalibration2k3/air_call_procedures2k3.pdf)
- [http://srmwww.gov.bc.ca/tib/vri/vri/standards/photo\\_interp/vri\\_pi\\_gcall\\_2k4.pdf](http://srmwww.gov.bc.ca/tib/vri/vri/standards/photo_interp/vri_pi_gcall_2k4.pdf)

## 2.7 Attribute Estimation: (Final Classification).

All attribute estimation will be to MoFR VRI Standards, using certified photo interpreters. It is expected the same interpreters will perform all phases of work for a particular set of maps to maintain consistency. Initial delineation will be re-assessed during attribute estimation to ensure

consistency and maintenance of VRI Standards. If any line work requires change, this will be done at this stage.

Use of softcopy technology also allows measurement of tree heights to occur off the photos. To assist in the accuracy of height estimates, tree heights for selected polygons will be measured using softcopy to verify height estimates. The August 12,2003 SOTSA 22 4206019 VRI Test Sheets Okanagan TSA Project Plan recommended:

One tree height of the leading species will be measured in 50% of the treed polygons via softcopy. In polygons where there is significant difference in height (3+ m) between the first and second species, a second height on the next leading species will be measured.

## 2.8 Digital Products

Completed digital data files will be submitted in Ministry Digital Standard format (Intergraph Design File (IGDS) Format, version 8.0 or later. The Okanagan IFPA will ensure that the latest requirements for digital products are included in any contracts. All other VRI Standard digital requirements will also be followed.

## 2.9 Additional Products to Deliver to MoF

- Air call/ground call locations and information in hardcopy and digital format
- Any digital products produced for the softcopy process
- Copies of QC/QA reports
- Any relevant project documentation

## 2.10 Quality Assurance

**For the VRI Phase 1:** A VRI contractor will be responsible to complete all work to VRI Standards and to ensure that proper Quality control and assurance is completed. The contractor will maintain and make available documentation on all quality control checks completed in a format acceptable to the MOFR. Work not conducted in accordance with the required standards and specifications will be deemed unacceptable and will not be eligible for final payment. A 3<sup>rd</sup> party certified photo interpreter for quality assurance will be required to properly assess work. Quality assurance by qualified 3<sup>rd</sup> party personnel of the data source transfer, polygon delineation and field calibration data collection and final attribute estimation will be completed similar to traditional methodology used in previous re-inventory projects.

**The final digital (VRI) product** must meet all VRI Standards and pass through the MoF editing, review processes or be considered incomplete.

The graphic file must be checked for the integrity of the file structure to ensure that there are no corrupt elements or missing pointers internally. A further check will be made to ensure that the data entered meets the criteria defined in the standards and specifications by checking the parameters that are entered on each layer or theme. A log report indicating the type of errors found on each level must be provided.

### 3. PROJECT IMPLEMENTATION

#### 3.1 Scheduling

Emphasis will be placed on the north half of the TSA. It is expected that preliminary delineation of 101 mapsheets will be completed prior to March 31<sup>st</sup>,2006. Full Phase 1 is proposed on 10 mapsheets where funding is almost funding secured however it is still subject to funding availability, another 10 mapsheets could also be completed subject to funding availability

Activities will include:

- Polygon Delineation .
- Field Data Collection
- Polygon Descriptions
- Final Digital Mapping; and,
- Final Deliverables

Table 4 provides a summary of delivery schedule, by phase. Photo delineation in the northern wet belt is scheduled September /05 to February /06. Depending on funding availability.

Table 4..... Summary of Estimated Delivery Schedule by Phase for the Okanagan TSA

Fiscal Year	Photo Preparation	Polygon Delineation	Data Source Transfer.	Field Data Collection	Polygon Descriptions	Final Digital Mapping and Deliverables	Quality Control
<b>2005</b>	n/a	Sept. – Feb.	Nov. – Mar.	Dec. Subject to funding and weather condition 10 sheets	Dec -Mar Subject to funding 10 map sheets	91 map tiles delineation  10 map tiles VRI Phase 1	Continuous
<b>2006</b>			Apr - May	April - June	June – Nov.	Nov. Mar. 91 map tiles	Continuous

#### 3.2 Project Coordinator

Glen Dick, RPF  
Okanagan innovative Forestry Society

#### 4.0 Estimation of Funding Requirements.

The funding source is currently unknown. Estimates are based on some past costs projects. There are 192 maps in the TSA and 12 are completed, leaving 180 maps. The initial bio-terrain delineation should reduce these costs, but by or if how much is unknown. Work in 2005-06 fiscal will be limited to the northern wet belt areas , 101 mapsheets, and mapsheets in the dry belt where pine is a minor species ranging from 0 -49% pine.

Table 5: Proposed budget for VRI Phase 1

Maps	Initial Delineation / Data Source Transfer	Field Work	Final Attribute Estimation	Digital Product	Total
10	20,000	70,000	40,000	20,000	150,000
91	192,000	637,000	364,000	182,000	1,365,000

#### 5. Reference Material

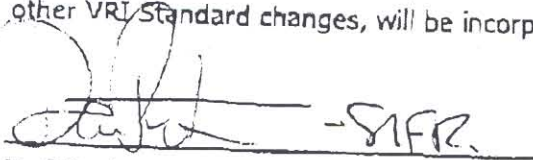
Summary of the project specifications;  
 BC Land Cover Classification Scheme (2002);  
 VRI Photo Interpretation Procedures (2002);  
 VRI Quality Assurance Procedures for Photo Interpretation (1998);  
 VRI Photo Interpretation Standards (1998);  
 VRI Air Calibration Data Collection Procedures and Standards (2003);  
 VRI Ground Calibration Data Collection Procedures and Standards (2004);  
 MSRM Vector Cleaning Specifications (1997).  
 BC Ministry of Forests' Inventory Manual;  
 BC Ministry of Forests' Biodiversity Guidebook;  
 BC Ministry of Forests' Color Stereogram Handbook;  
 BC Ministry of Forests' Black and White Stereogram Handbook;  
 Several tree and plant identification field guides.



## 1.0 PLAN SIGN OFF

I have read and concur with the 2005-06 Revision to Okanagan TSA VPIP (Project Implementation Plan), November, 2005. It is understood that this is an agreement in principle and does not commit the signatories to completing the inventory activities outlined within the plan. Modifications to the plan and / or more detailed plans are required to be reviewed and approved by all signatories.

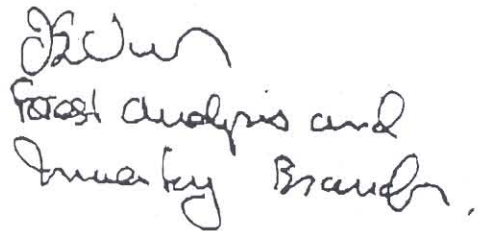
All signatories acknowledge that the licensee reserves the right to obtain newer imagery and technology for any inventory work undertaken and that this imagery and technology and actual works undertaken will be to MoF approved standards and/or procedures in place at the time of project commencement. Also that any new VRI Standards or processes, that may evolve at a result of the MPB Inventory Strategy or other VRI Standard changes, will be incorporated.

 - SIFR

MoF Designate



\_\_\_\_\_  
Executive Director  
Okanagan Innovative Forestry Society

  
Forest Analysis and  
Inventory Branch.

## 6. PLAN SIGN OFF

I have read and concur with the 2005-06 Revision to Okanagan TSA VPIP (Project Implementation Plan) dated November, 2005. It is understood that this is an agreement in principle and does not commit the signatories to completing the inventory activities outlined within the plan.

All signatories acknowledge that the licensee reserves the right to obtain newer imagery and technology for any inventory work undertaken and that this imagery and technology and actual works undertaken will be to current MSRM approved standards and/or procedures in place at the time of project commencement. Also that any new VRI Standards or processes, that may evolve at a result of the MPB Inventory Strategy or other VRI Standard changes, will be incorporated.



*November 14, 2005*

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Okanagan Innovative Forestry Society  
IFPA Representative.

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Date

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MoFR Regional Designate:

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Date

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MoFR Branch Designate

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Date

## APPENDIX: 1

The Okanagan TSA is compressed of 192 maps or 136.6 MSE's (map sheet equivalents)

**Maps in bold text indicate wet belt / fir leading priority areas**

82E001	82E073	82L013	<b>82L049</b>	<b>82L086</b>	<b>82M036</b>
82E002	82E074	82L014	<b>82L050</b>	<b>82L087</b>	<b>82M037</b>
82E003	82E075	82L015	<b>82L051</b>	<b>82L088</b>	<b>82M038</b>
82E004	82E076	82L016	<b>82L052</b>	<b>82L089</b>	<b>82M045</b>
82E011	82E077	82L017	<b>82L053</b>	<b>82L092</b>	<b>82M046</b>
82E012	82E081	**82L018	<b>82L054</b>	<b>82L093</b>	<b>82M047</b>
82E013	82E082	<b>82L019</b>	<b>82L055</b>	<b>82L094</b>	<b>82M048</b>
82E014	82E083	**82L021	<b>82L056</b>	<b>82L095</b>	<b>82M056</b>
82E021	**82E084	**82L022	<b>82L057</b>	<b>82L096</b>	<b>82M057</b>
82E022	**82E085	<b>82L023</b>	<b>82L058</b>	<b>82L097</b>	<b>82M065</b>
82E023	82E086	<b>82L024</b>	<b>82L059</b>	<b>82L098</b>	<b>82M066</b>
82E024	82E087	<b>82L025</b>	<b>82L060</b>	<b>82L099</b>	92H008
82E025	82E088	<b>82L026</b>	<b>82L062</b>	<b>82M003</b>	92H009
82E031	82E091	<b>82L027</b>	<b>82L063</b>	<b>82M004</b>	92H010
82E032	82E092	<b>82L028</b>	<b>82L064</b>	<b>82M005</b>	92H018
82E033	82E093	<b>82L029</b>	<b>82L065</b>	<b>82M006</b>	92H019
**82E034	82E094	<b>82L031</b>	<b>82L066</b>	<b>82M007</b>	92H020
82E041	82E095	<b>82L032</b>	<b>82L067</b>	<b>82M008</b>	92H029
82E042	82E096	<b>82L033</b>	<b>82L068</b>	<b>82M009</b>	92H029
82E043	83E097	<b>82L034</b>	<b>82L069</b>	<b>82M013</b>	92H030
82E044	82E098	<b>82L035</b>	<b>82L070</b>	<b>82M014</b>	92H040
82E051	82E099	<b>82L036</b>	<b>82L072</b>	<b>82M015</b>	92H050
82E052	**82L001	<b>82L037</b>	<b>82L073</b>	<b>82M016</b>	92H060
82E053	**82L002	<b>82L038</b>	<b>82L074</b>	<b>82M017</b>	92H070
82E054	82L003	<b>82L039</b>	<b>82L075</b>	<b>82M018</b>	92H079
82E055	82L004	<b>82L041</b>	<b>82L076</b>	<b>82M023</b>	**92H080
82E061	82L005	<b>82L042</b>	<b>82L077</b>	<b>82M024</b>	92H089
82E062	82L006	<b>82L043</b>	<b>82L078</b>	<b>82M025</b>	92H090
82E063	82L007	<b>82L044</b>	<b>82L079</b>	<b>82M026</b>	92H100
82E064	82L008	<b>82L045</b>	<b>82L082</b>	<b>82M027</b>	92I010
82E065	82L009	<b>82L046</b>	<b>82L083</b>	<b>82M028</b>	92I040
82E071	**82L011	<b>82L047</b>	<b>82L084</b>	<b>82M034</b>	92I050
82E072	**82L012	**82L048	<b>82L085</b>	<b>82M035</b>	

\*\* Maps already completed to VRI Standards

Appendix 2: Okanagan TSA Projected Workplan 2005 - 2007

Okanagan TSA VRI Phase 1 Projected Workplan 2005 - 2007

MAP SHEETS	Prod Ha	Pre Phase 1 VRI						Phase 1 VRI				Comments
		PHOTOS	SCALE	COLOUR or B& W	Pine %	FD %	Operational Cruise Plot Field Data 10,000 plots	POLYGON DELINEATION	VRI FIELD CHECKING	CLASSIFICATION	COMPLETE	
82M066	1,969	3-Jul-02	1:30,000	Colour	0	0	2003	Mar-06				Forest Dimensions
82M057	0	3-Jul-02	1:30,000	Colour	0	0	2003	Mar-06				Forest Dimensions
82M056	4,952	3-Jul-02	1:30,000	Colour	3	3	2003	Mar-06				Forest Dimensions
82M055	0	3-Jul-02	1:30,000	Colour			2003	Mar-06				Forest Dimensions
82M047	3,122	3-Jul-02	1:30,000	Colour	3	1	2003	Mar-06				Forest Dimensions
82M046	7,175	3-Jul-02	1:30,000	Colour	2	7	2003	Mar-06				Forest Dimensions
82M045	171	3-Jul-02	1:30,000	Colour	0	0	2003	Mar-06				Forest Dimensions
82M038	0	3-Jul-02	1:30,000	Colour			2003	Mar-06				Forest Dimensions
82M037	7,927	3-Jul-02	1:30,000	Colour	4	5	2003	Mar-06				Forest Dimensions
82M036	13,917	3-Jul-02	1:30,000	Colour	6	24	2003	Mar-06				Forest Dimensions
82M035	9,421	3-Jul-02	1:30,000	Colour	13	6	2003	Mar-06				Forest Dimensions
82M034	129	3-Jul-02	1:30,000	Colour			2003	Mar-06				Forest Dimensions
82M028		3-Jul-02	1:30,000	Colour	0	0	2003	Mar-06				Forest Dimensions
82M027	5,090	3-Jul-02	1:30,000	Colour	1	0	2003	Mar-06				Forest Dimensions
82M026	12,247	3-Jul-02	1:30,000	Colour	7	25	2003	Mar-06				Forest Dimensions
82M025	12,881	3-Jul-02	1:30,000	Colour	9	17	2003	Mar-06				Forest Dimensions
82M024	5,478	3-Jul-02	1:30,000	Colour	25	7	2003	Mar-06				Forest Dimensions
82M023	1,026	3-Jul-02	1:30,000	Colour	2	5	2003	Mar-06				Forest Dimensions
82M018	3,145	3-Jul-02	1:30,000	Colour	0	1	2003	Mar-06				Forest Dimensions
82M017	9,841	3-Jul-02	1:30,000	Colour	3	9	2003	Mar-06				Forest Dimensions
82M016	13,144	3-Jul-02	1:30,000	Colour	11	34	2003	Mar-06				Forest Dimensions
82M015	11,050	3-Jul-02	1:30,000	Colour	5	16	2003	Mar-06				Forest Dimensions
82M014	10,527	3-Jul-02	1:30,000	Colour	2	10	2003	Mar-06				Forest Dimensions
82M013	6,835	3-Jul-02	1:30,000	Colour	3	17	2003	Mar-06				Forest Dimensions
82M008	7,272	3-Jul-02	1:30,000	Colour	2	5	2003	Mar-06				Forest Dimensions
82M007	12,712	3-Jul-02	1:30,000	Colour	3	13	2003	Mar-06				Forest Dimensions
82M006	10,006	3-Jul-02	1:30,000	Colour	9	27	2003	Mar-06				Forest Dimensions
82M005	11,738	3-Jul-02	1:30,000	Colour	4	31	2003	Mar-06				Forest Dimensions
82M004	12,383	3-Jul-02	1:30,000	Colour	4	21	2003	Mar-06				Forest Dimensions
82M003	9,166	3-Jul-02	1:30,000	Colour	4	19	2003	Mar-06				Forest Dimensions

Number of mapsheets with Pine = 51% -> 83% 50  
 Number of mapsheets with Pine = 21% -> 49% 50  
 Number of mapsheets with Pine = 1% -> 20% 92  
 Number of mapsheets with Fd = 51% -> 83% 34  
 Number of mapsheets with Fd = 21% -> 49% 39  
 Number of mapsheets with Fd = 1% -> 20%

Okanagan TSA VRI Phase 1 Projected Workplan 2005 - 2007

Pre Phase 1 VRI							Phase 1 VRI					Comments
MAP SHEETS	Prod Ha	PHOTOS	SCALE	COLOUR or B & W	Pine %	FD %	Operational Cruise Plot Field Data 10,000 plots	POLYGON DELINEATION	VRI FIELD CHECKING	CLASSIFICATION	COMPLETE	
82L099	2,649	22-Sep-01	1:30,000	Colour	1	7	2003	Mar-06				Timberline
82L098	10,264	22-Sep-01	1:30,000	Colour	3	2	2003	Mar-06				Timberline
82L097	11,583	22-Sep-01	1:30,000	Colour	5	21	2003	Mar-06				Timberline
82L096	7,871	22-Sep-01	1:30,000	Colour	5	14	2003	Mar-06				Timberline
82L095	6,593	22-Sep-01	1:30,000	Colour	7	50	2003	Mar-06				Timberline
82L094	5,595	22-Sep-01	1:30,000	Colour	7	53	2003	Mar-06				Timberline
82L093	8,727	22-Sep-01	1:30,000	Colour	16	38	2003	Mar-06				Timberline
82L092	96	22-Sep-01	1:30,000	Colour			2003	Mar-06				Timberline
82L089	1,256	22-Sep-01	1:30,000	Colour	2	15	2003	Mar-06				Timberline
82L088	11,635	22-Sep-01	1:30,000	Colour	5	20	2003	Mar-06				Timberline
82L087	11,502	22-Sep-01	1:30,000	Colour	2	7	2003	Mar-06				Timberline
82L086	11,475	22-Sep-01	1:30,000	Colour	9	22	2003	Mar-06				Timberline
82L085	9,686	22-Sep-01	1:30,000	Colour	7	39	2003	Mar-06				Timberline
82L084	7,997	22-Sep-01	1:30,000	Colour	9	67	2003	Mar-06				Timberline
82L083	6,690	22-Sep-01	1:30,000	Colour	22	48	2003	Mar-06				Timberline
82L082	1,666	22-Sep-01	1:30,000	Colour	31	59	2003	Mar-06				Timberline
82L079	6,532	22-Sep-01	1:30,000	Colour	2	4	2003	Mar-06				Timberline
82L078	10,704	22-Sep-01	1:30,000	Colour	7	22	2003	Mar-06				Timberline
82L077	13,250	22-Sep-01	1:30,000	Colour	6	30	2003	Mar-06				Timberline
82L076	10,564	22-Sep-01	1:30,000	Colour	6	15	2003	Mar-06				Timberline
82L075	11,289	22-Sep-01	1:30,000	Colour	8	51	2003	Mar-06				Timberline
82L074	4,439	22-Sep-01	1:30,000	Colour	36	42	2003	Mar-06				Timberline
82L073	13,409	22-Sep-01	1:30,000	Colour	52	15	2003					Pine > 50% defer to post MPB
82L072	6,361	22-Sep-01	1:30,000	Colour	39	42	2003					Pine > 50% defer to post MPB
82L069	9,058	22-Sep-01	1:30,000	Colour	8	16	2003	Mar-06				Timberline
82L068	9,058	22-Sep-01	1:30,000	Colour	7	13	2003	Mar-06				Timberline
82L067	10,035	22-Sep-01	1:30,000	Colour	7	50	2003	Mar-06				Timberline
82L066	11,895	22-Sep-01	1:30,000	Colour	3	15	2003	Mar-06				Timberline
82L065	11,899	22-Sep-01	1:30,000	Colour	12	55	2003	Mar-06				Timberline
82L064	6,102	22-Sep-01	1:30,000	Colour	19	30	2003	Mar-06				Timberline
82L063	8,477	22-Sep-01	1:30,000	Colour	26	3	2003					Pine > 50% defer to post MPB
82L062	13,761	22-Sep-01	1:30,000	Colour	52	32	2003					Pine > 50% defer to post MPB
82L061	6,930	22-Sep-01	1:30,000	Colour		32	2003					
82L059	10,092	22-Sep-01	1:30,000	Colour	20	22	2003	Mar-06				Timberline
82L058	12,687	22-Sep-01	1:30,000	Colour	5	13	2003	Mar-06				Timberline
82L057	11,886	22-Sep-01	1:30,000	Colour	6	36	2003	Mar-06				Timberline
82L056	10,821	22-Sep-01	1:30,000	Colour	6	47	2003	Mar-06				Timberline
82L055	5,205	22-Sep-01	1:30,000	Colour	12	60	2003	Mar-06				Timberline
82L054	5,523	22-Sep-01	1:30,000	Colour	41	42	2003	Mar-06	Mar-06	Mar-06	Mar-06	
82L053	3,790	22-Sep-01	1:30,000	Colour	32	24	2003	Mar-06				Timberline
82L052	7,861	22-Sep-01	1:30,000	Colour	37	53	2003					Pine > 50% defer to post MPB
82L051	255	22-Sep-01	1:30,000	Colour	8	77	2003					Pine > 50% defer to post MPB
82L049	5,203	22-Sep-01	1:30,000	Colour	6	23	2003	Mar-06				Timberline
82L048	12,441	22-Sep-01	1:30,000	Colour	9	25	2003	Mar-04	Mar-04	Mar-04	Mar-04	FOR IFA Business Plan
82L047	11,153	22-Sep-01	1:30,000	Colour	11	36	2003	Mar-06				Timberline
82L046	11,542	22-Sep-01	1:30,000	Colour	12	61	2003	Mar-06	Mar-06	Mar-06	Mar-06	
82L045	9,620	22-Sep-01	1:30,000	Colour	15	47	2003	Mar-06	Mar-06	Mar-06	Mar-06	
82L044	3,086	22-Sep-01	1:30,000	Colour	26	53	2003	Mar-06				Timberline
82L043	9,344	22-Sep-01	1:30,000	Colour	20	61	2003	Mar-06	Mar-06	Mar-06	Mar-06	
82L042	10,617	22-Sep-01	1:30,000	Colour	35	57	2003	Mar-06	Mar-06	Mar-06	Mar-06	
82L041	618	22-Sep-01	1:30,000	Colour	19	80	2003	Mar-06				Timberline
82L039	6,238	22-Sep-01	1:30,000	Colour	10	18	2003	Jun-05				Timberline
82L038	12,996	22-Sep-01	1:30,000	Colour	8	24	2003	Jun-05				Timberline
82L037	12,496	22-Sep-01	1:30,000	Colour	12	31	2003	Jun-05				Timberline
82L036	11,414	22-Sep-01	1:30,000	Colour	16	55	2003	Jun-05	Mar-06	Mar-06	Mar-06	
82L035	11,721	22-Sep-01	1:30,000	Colour	37	39	2003	Jun-05	Mar-06	Mar-06	Mar-06	
82L034	2,422	22-Sep-01	1:30,000	Colour	37	39	2003	Jun-05				Timberline
82L033	9,261	22-Sep-01	1:30,000	Colour	48	42	2003	Mar-06				Timberline
82L032	5,584	22-Sep-01	1:30,000	Colour	64	6	2003	Mar-06				Timberline
82L031	295	22-Sep-01	1:30,000	Colour	5		2003	Mar-06				
82L029	7,643	22-Sep-01	1:30,000	Colour	7	15	2003	Jun-05				Timberline
82L028	11,833	22-Sep-01	1:30,000	Colour	17	39	2003	Jun-05				Timberline
82L027	7,801	22-Sep-01	1:30,000	Colour	27	53	2003	Jun-05	Mar-06	Mar-06	Mar-06	
82L026	4,290	22-Sep-01	1:30,000	Colour	14	74	2003	Jun-05				Timberline
82L025	6,169	22-Sep-01	1:30,000	Colour	14	56	2003	Jun-05				Timberline
82L024	286	22-Sep-01	1:30,000	Colour	38	51	2003	Jun-05				Timberline
82L023	595	22-Sep-01	1:30,000	Colour	11	56	2003	Mar-06				Timberline
82L022	1,338	22-Sep-01	1:30,000	Colour	65	0	2003	Mar-04	Mar-04	Mar-04	Mar-04	Riverside VRI for Beetles
92I010	2,651	22-Sep-01	1:30,000	Colour	83		2003	2003				Timberline

Okanagan TSA VRI Phase 1 Projected Workplan 2005 - 2007

Pre Phase 1 VRI								Phase 1 VRI					Comments
MAP SHEETS	Prod Ha	PHOTOS	SCALE	COLOUR or B & W	Pine %	FD %	Operational Cruise Plot Field Data 10,000 plots	POLYGON DELINEATION	VRI FIELD CHECKING	CLASSIFICATION	COMPLETE		
92H100	8,798	22-Sep-01	1:30,000	Colour	76		2003	2003				Timberline	
92H090	13,151	22-Sep-01	1:30,000	Colour	61	0							
92H089	1,364	22-Sep-01	1:30,000	Colour	47	0	2003	2003				Timberline	
92H080	13,529	22-Sep-01	1:30,000	Colour	68	15	2003	Mar-04	Mar-04	Mar-04	Mar-04	FOR IFPA Business Plan	
92H079	273	22-Sep-01	1:30,000	Colour	70	0	2003	2003				Timberline	
92H070	8,427	22-Sep-01	1:30,000	Colour	79	4	2003	2003				Timberline	
92H060	2,061	22-Sep-01	1:30,000	Colour	70	0	2003	2003				Timberline	
92H050	2,607	22-Sep-01	1:30,000	Colour	71	14	2003	2003				Timberline	
92H040	2,729	22-Sep-01	1:30,000	Colour	41	35	2003	2003				Timberline	
92H030	954	22-Sep-01	1:30,000	Colour	13	72	2003	2003				Timberline	
92H029	321	22-Sep-01	1:30,000	Colour	69	10	2003						
92H028		22-Sep-01	1:30,000	Colour			2003						
92H020	11,480	22-Sep-01	1:30,000	Colour	66	10	2003						
92H019	9,354	22-Sep-01	1:30,000	Colour	63	15	2003						
92H018	772	22-Sep-01	1:30,000	Colour	49	0	2003	2003				Timberline	
92H010		22-Sep-01	1:30,000	Colour	83	0	2003					Anarchist Prov Park	
92H009	11,223	22-Sep-01	1:30,000	Colour	68	1	2003						
92H008	2,016	22-Sep-01	1:30,000	Colour	37	0	2003	2003				Timberline	
82E099	556	22-Sep-01	1:30,000	Colour	5	3	2003						
82E098	13,258	22-Sep-01	1:30,000	Colour	24	1	2003						
82E097	14,516	22-Sep-01	1:30,000	Colour	36	10	2003						
82E096	12,159	22-Sep-01	1:30,000	Colour	21	1	2003	2003				Timberline	
82E095	14,869	22-Sep-01	1:30,000	Colour	60	8	2003						
82E094	7,319	22-Sep-01	1:30,000	Colour	51	19	2003						
82E093	2,471	22-Sep-01	1:30,000	Colour	31	63	2003						
82E092	7,495	22-Sep-01	1:30,000	Colour	55	25	2003						
82E091	12,453	22-Sep-01	1:30,000	Colour	55	1	2003						
82E090		22-Sep-01	1:30,000	Colour	61		2003						
82E088	628	22-Sep-01	1:30,000	Colour	10	0	2003						
82E087	8,791	22-Sep-01	1:30,000	Colour	40	10	2003						
82E086	14,501	22-Sep-01	1:30,000	Colour	43	0	2003						
82E085	13,498	22-Sep-01	1:30,000	Colour	52	30		Mar-01	Mar-01	Mar-01	Mar-01	Gorman's Joe Rich	
82E084	6,015	22-Sep-01	1:30,000	Colour	46	43		Mar-01	Mar-01	Mar-01	Mar-01	Gorman's Joe Rich	
82E083	1,183	22-Sep-01	1:30,000	Colour	41	54	2003						
82E082	9,994	22-Sep-01	1:30,000	Colour	36	58	2003						
82E081	13,289	22-Sep-01	1:30,000	Colour	65	24	2003						
82E077	320	22-Sep-01	1:30,000	Colour	42	45	2003						
82E076	5,885	22-Sep-01	1:30,000	Colour	25	0	2003						
82E075	12,663	22-Sep-01	1:30,000	Colour	71	8	2003	2003				Timberline	
82E074	14,881	22-Sep-01	1:30,000	Colour	60	3	2003						
82E073	12,168	22-Sep-01	1:30,000	Colour	64	24	2003						
82E072	4,929	22-Sep-01	1:30,000	Colour	39	57	2003						
82E071	14,910	22-Sep-01	1:30,000	Colour	48	42	2003						
82E065	8,177	22-Sep-01	1:30,000	Colour	72	16	2003	2003				Timberline	
82E064	14,322	22-Sep-01	1:30,000	Colour	62	8	2003	2003				Timberline	
82E063	14,132	22-Sep-01	1:30,000	Colour	63	11	2003						
82E062	4,947	22-Sep-01	1:30,000	Colour	70	27	2003						
82E061	13,220	22-Sep-01	1:30,000	Colour	49	47	2003						
82E055	2,249	22-Sep-01	1:30,000	Colour	56	33	2003	2003				Timberline	
82E054	15,354	22-Sep-01	1:30,000	Colour	58	12	2003	2003				Timberline	
82E053	10,836	22-Sep-01	1:30,000	Colour	60	24	2003						
82E052	1,632	22-Sep-01	1:30,000	Colour	51	48	2003						
82E051	12,125	22-Sep-01	1:30,000	Colour	60	26	2003						
82E044	13,539	22-Sep-01	1:30,000	Colour	79	8	2003						
82E043	9,913	22-Sep-01	1:30,000	Colour	71	26	2003						
82E042	2,729	22-Sep-01	1:30,000	Colour	15	84	2003						
82E041	11,841	22-Sep-01	1:30,000	Colour	62	17	2003						
82E035		22-Sep-01	1:30,000	Colour			2003					TFL15	
82E034	5,268	22-Sep-01	1:30,000	Colour	74	3	2003	2003	Mar-03	Mar-03	Mar-03	COMPLETE IFPA Business Plan	
82E033	6,788	22-Sep-01	1:30,000	Colour	61	35	2003						
82E032	4,614	22-Sep-01	1:30,000	Colour	11	85	2003						
82E031	10,799	22-Sep-01	1:30,000	Colour	45	22	2003						
82E024		22-Sep-01	1:30,000	Colour								TFL15	
82E023	1,224	22-Sep-01	1:30,000	Colour	13	4	2003						
82E022	9,527	22-Sep-01	1:30,000	Colour	12	77	2003						
82E021	7,486	22-Sep-01	1:30,000	Colour	24	61	2003						