

TABLE OF CONTENTS

FOREWORD	iii
NOTICE TO USERS	v
TABLE OF CONTENTS	vii
CHAPTER 1 INTRODUCTION	
1.1 SCOPE	1.1
1.2 PURPOSE	1.1
1.3 HOW TO USE THIS GUIDE	1.1
1.4 THE APPLICATION OF TAB	1.1
1.5 THE TAB TECHNICIAN/TEAM	1.2
1.6 ENERGY COSTS AND COMFORT	1.2
CHAPTER 2 PRELIMINARY TAB PROCEDURES	
2.1 INITIAL PLANNING	2.1
2.2 CONTRACT DOCUMENTS	2.1
2.3 SYSTEM REVIEW AND ANALYSIS	2.2
2.4 THE AGENDA	2.4
2.5 PLANNING FIELD TAB PROCEDURES	2.5
2.6 PRELIMINARY FIELD PROCEDURES	2.6
CHAPTER 3 GENERAL AIR SYSTEM TAB PROCEDURES	
3.1 BASIC FAN TESTING PROCEDURES	3.1
3.2 SYSTEM START-UP	3.1
3.3 FAN TESTING	3.1
3.4 DEFICIENCY REVIEW	3.2
3.5 RETURN AND OUTSIDE AIR SETTINGS	3.2
3.6 ANALYSIS OF MEASUREMENTS	3.3
3.7 RECORDING DATA	3.3
3.8 PROPORTIONAL BALANCING (RATIO) METHOD	3.3
3.9 PERCENTAGE OF DESIGN AIRFLOW	3.3
3.10 SYSTEM AIRFLOW	3.5
3.11 BASIC OUTLET BALANCING PROCEDURES	3.5
3.12 STEPWISE METHOD	3.5
3.13 FAN ADJUSTMENT	3.6
3.14 WET COIL CONDITIONS	3.6
3.15 AIRFLOW TOTALS	3.6
3.16 EXHAUST FANS	3.6
3.17 FAN DRIVE ADJUSTMENT	3.6



3.18	DAMPER ADJUSTMENTS	3.6
3.19	DUCT TRAVERSES	3.7
3.20	SYSTEM DEFICIENCIES	3.7
3.21	FUME HOOD EXHAUST BALANCING PROCEDURES	3.7
3.22	DUST COLLECTION AND EXHAUST BALANCING PROCEDURES	3.8
3.23	AIRFLOW MEASUREMENTS ON DISCHARGE STACKS	3.11
3.24	INDUSTRIAL VENTILATION	3.12
3.25	SELECTION OF INSTRUMENTS	3.12
CHAPTER 4	TAB PROCEDURES FOR SPECIFIC AIR SYSTEMS	
4.1	INTRODUCTION	4.1
4.2	VARIABLE AIR VOLUME (VAV) SYSTEMS	4.1
4.3	MULTI-ZONE SYSTEMS	4.13
4.4	INDUCTION UNIT SYSTEMS	4.14
4.5	DUAL DUCT SYSTEMS	4.14
4.6	SPECIAL EXHAUST AIR SYSTEMS	4.16
4.7	PROCESS EXHAUST AIR SYSTEMS	4.17
CHAPTER 5	HYDRONIC SYSTEM TAB PROCEDURES	
5.1	HYDRONIC SYSTEM MEASUREMENT METHODS	5.1
5.2	BASIC HYDRONIC SYSTEM PROCEDURES	5.3
5.3	PIPING SYSTEM BALANCING	5.4
5.4	BALANCING SPECIFIC SYSTEMS	5.5
5.5	VARIABLE VOLUME FLOW	5.9
5.6	PRIMARY-SECONDARY SYSTEMS	5.11
5.7	SUMMER-WINTER SYSTEMS	5.11
CHAPTER 6	TAB REPORT FORMS	
6.1	PREPARING TAB REPORT FORMS	6.1
6.2	DESCRIPTION OF USE	6.1
INDEX		I.1

TABLES

3-1	Sample of Airflow Rates	3.4
5-1	Load-Flow Variations	5.10

FIGURES

2-1	Schematic Duct System Layout	2.3
2-2	Instruments Selected for a Specific Job	2.5
3-1	Sample Supply Air Duct (Part)	3.4
3-2	Typical Air Diffuser CFM Measurement	3.6
3-3	Measuring Exhaust Air Velocity on Lab Exhaust Hood with Sash Height	3.7
3-4	Example of Exhaust Hood Air Balance Label	3.8
3-5	Sample Dust Collection Exhaust System	3.9
4-1	Typical Variable Air Volume (VAV) System	4.1
4-2	Open Loop Fan Volume Control	4.2
4-3	Closed Loop Fan Volume Control	4.3
4-4	Fan and System Curves, Constant-Speed Fan	4.4
4-5	Fan and System Curves, Variable-Speed Fan	4.4
4-6	Series Fan Powered VAV Unit	4.9
4-7	Parallel Fan Powered VAV Unit	4.9
4-8	Paper Strip at VAV Box Return Before Balancing	4.10
4-9	Paper Strip at VAV Box After Balancing	4.10
4-10	Constant Fan VAV Box	4.12
4-11	Intermittent Fan VAV Box (Parallel) Cycle	4.13
4-12	Multi-zone System	4.14
4-13	Dual Duct System	4.15
4-14	Induction Unit System	4.16
5-1	Hydronic Flow Measurement	5.1
5-2	External Ultrasonic Flow Sensor on Pipe with Insulation Removed	5.2
5-3	Ultrasonic Flow Meter	5.2
5-4	Effects of Flow Variation on Heat Transfer 20°F (11°C) Δt at 200°F (93°C)	5.9
5-5	Percent Variation to Maintain 90% Terminal Heat Transfer	5.9
5-6	Chilled Water Terminal Flow Versus Heat Transfer	5.10
5-7	Pump With Variable Speed Drive	5.11
5-8	Example of Primary and Secondary Pumping Circuits	5.12
5-9	Summer-Winter Systems	5.13

