



# RISK ASSESSMENT: FIRE



PRESERVATION OF BUDDHIST TREASURES RESOURCE is the free online resource for monasteries and communities, with practical information on digital documentation, risk assessment and disaster recovery, safer storage, and preservation of thangka and other treasures. The resource comes from over 50 years of preservation work in monasteries.



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## **RISK ASSESSMENT: FIRE**

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Acknowledgments

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## Risk Assessment: Fire

### Introduction



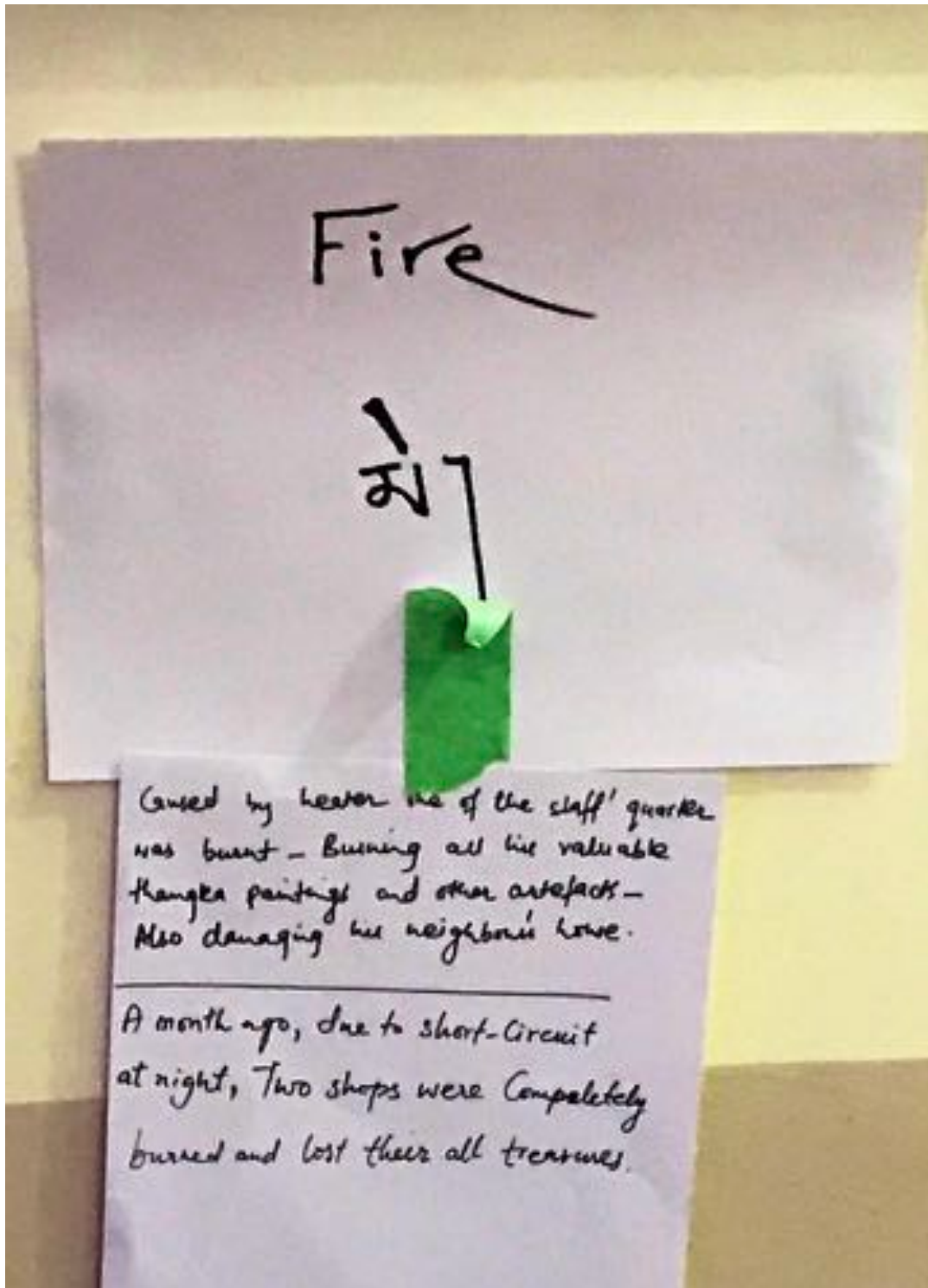
Fire — मे <sup>सर्वविद्यासुखाय</sup>  
 मे श्रुवद हेव कुं क वा वा द म अ म  
 Fire and light burn  
 the relic.

FIRE  
 मे

FIRE  
 BUTTER LAMPS  
 ↓  
 WE BUILT BUTTER LAMPS  
 HOUSE. (4 steps)

FIRE in the  
 BUTTER LAMP: LIGHT ONLY  
 BURNING FOR THEN  
 TAKEN OUT TO LAMP  
 HOUSE - SAME WITH  
 INCENSE

मे FIRE



Caused by heater one of the staff' quarters  
was burnt - Burning all his valuable  
thangka paintings and other artefacts -  
Also damaging his neighbour's home.

---

A month ago, due to short-circuit  
at night, Two shops were Completely  
burned and lost their all treasures.

*Monk and nun participants in Preservation of Monastery Treasures workshop talk about their own experiences with fire in their home monasteries and communities*

- “Fire and light burn the relics”
- “We built a butter lamp house outside”
- “Butter lamps are lit in the lhakhang only during the pujas then taken outside to the lamp house”
- “Incense is lit in lhakhang only during pujas then taken outside to the lamp house”
- “Heaters in the staff quarter caused fires which destroyed valuable thangka paintings and other artefacts. The fire also damaged the neighbor’s house”
- “Because electrical wiring short-circuited at night, two shops were completely burned, and all of their treasures were lost”

### **Monastics' Recommendations for Fire Prevention Safety in Their Own Monasteries**

- Outdated loose and open-ended wiring poses fire risks. For example, some of the electric wiring in wooden pecha cabinets poses fire hazards.
- Good-quality wiring is necessary for electric aloke offering on altars.
- An electrician can assess the condition of older wiring, or wiring damaged in earthquakes.
- Plastic covers are suggested for outdoor plug outlets at floor level to avoid water entry.
- Move all paint, cleaning supplies, and other similar items to a storage room outside the shrine halls to reduce fire hazards.

### **Fires in Monasteries**

Fires in monasteries can cause great irreparable damage.

- Loss of life
- Monastery buildings partially or completely destroyed
- Treasures destroyed
- Smoke damage
- Water damage
- Breakage
- Looting

Whether a fire is caused by lightning, earthquakes, a gas leak, someone smoking, a butter lamp, storage of flammable substances, or from a person starting the fire on purpose, people can be injured or die. Treasures may be damaged or destroyed as shown in the temple in the image below. There is often greater risk of fire during periods of renovation and construction. During reconstruction work on the interior, the entire temple was destroyed and everything in it lost.



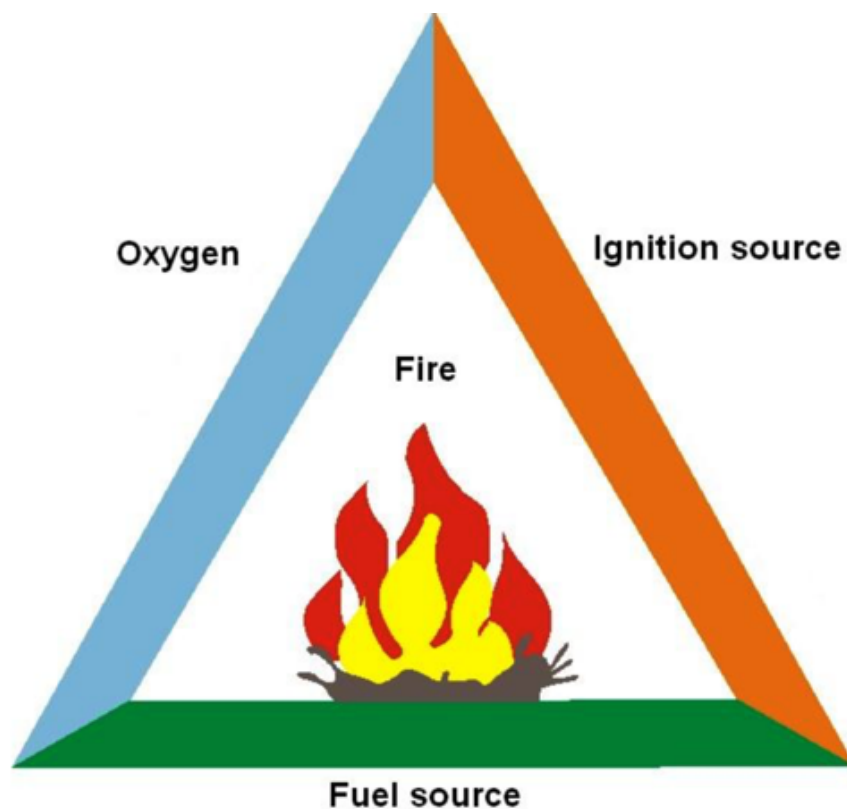
*Entire historic monastery burned down due to electrical fire*



*Shuri Castle in Okinawa destroyed by fire*



Fires start when there is material to burn, oxygen, and a spark or other source of ignition. To prevent a fire requires that one of the three is not present.



*Fire triangle (Canadian Conservation Institute)*

Fire can result from an earthquake but also from other risk factors, for example, from butter lamps or electrical sparks.

Monastery fires have been started during reconstruction and construction of temples and the statues inside the temple. For example, workers rebuilding a very large wooden/clay statue within a traditional wooden lhakhang during the winter months were using small wood fires to keep themselves warm. The fires were lit on the wooden scaffolding within the wooden building. The wiring used on their work lights was also not safely grounded. This type of risk is common on construction sites, and can easily be the cause of fires that cause serious damage to people and treasures.



*Craftsmen rebuilding a huge traditional wooden statue in an authentic temple built small fires to provide warmth for themselves while they worked in the unheated lhakhang during the winter months*

Most people know that butter lamps and incense can potentially cause problems. Lit incense sticks can easily fall over and cause a fire by landing on fabric or pechas. Butter lamps and incense are both traditional forms of offerings.





*Butter lamps and incense are traditional offerings that can also cause fires*



*Fire-protective butter lamp housed in wooden and glass box, and electric lights on the shrine*

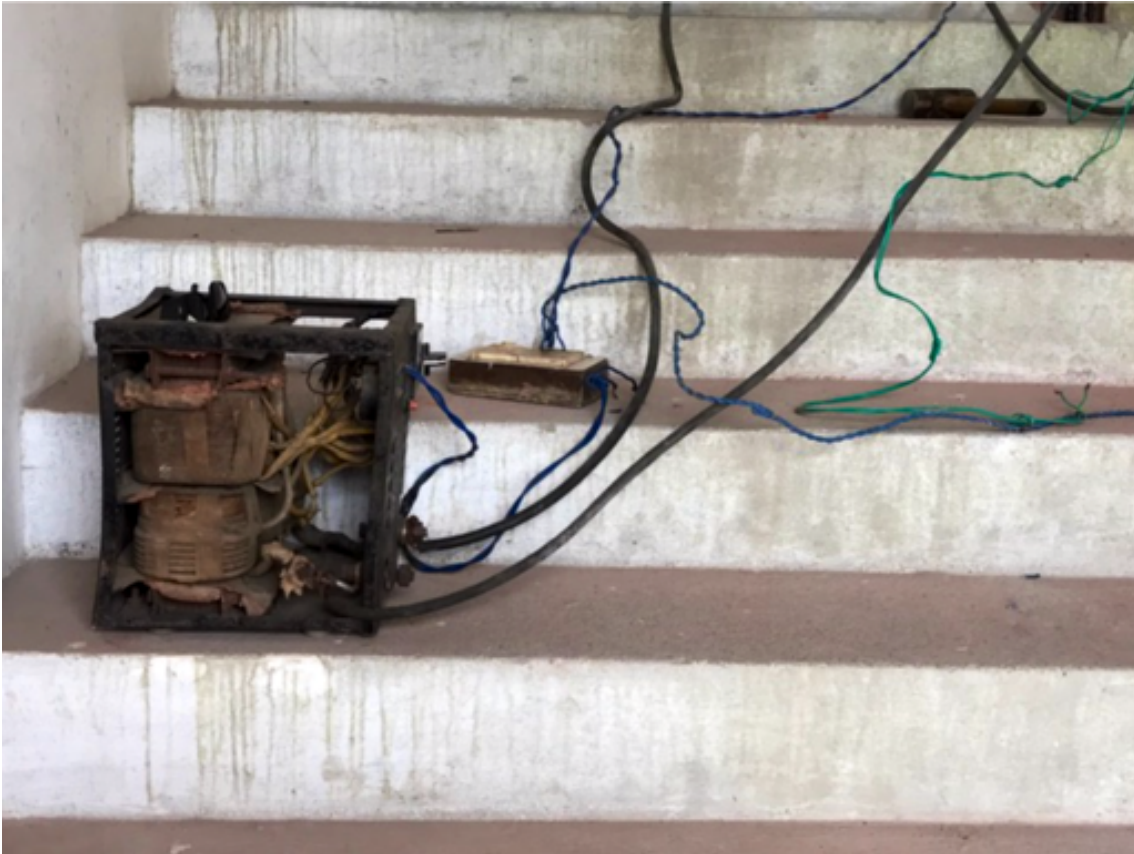


*Butter lamp houses are intended to be safer for the entire monastery*



*Even inside the butter lamp houses, simple fire safety practices can prevent fires and save lives. Here, the katas are hanging too close to the flames and this is very dangerous.*

Good maintenance of electrical systems and electrical wiring can prevent fires.

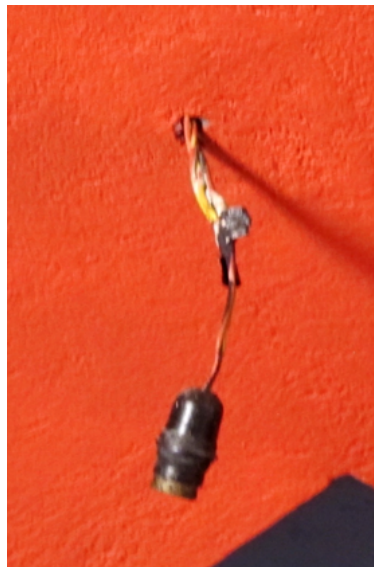


*Unsafe, outdated electrical systems and faulty wiring, when used in construction or during daily monastery life, can result in burning down the entire shedra and monastery*





*Craftsmen rebuilding a huge traditional wooden statue in a historic temple were using dangerous electrical wiring to provide light*



*Old and out-of-date wiring in the walls and ceilings of wooden, clay, or even concrete monastery buildings can create a serious fire hazard*

Many monasteries, shrine rooms, and in archives and museums that previously had traditional butter lamp light offerings have replaced them with safer electrical lights. However, some of these inexpensive electrical lights are poorly made and the wiring can be very dangerous. Poor-quality electrical lights can also start fires. While replacing

butter lamps with electrical lights can prevent fires, it is important that the lights are safely wired to prevent starting a fire.



*Although electric candles can be a safer alternative to traditional butter lamps with open flames, if the electric lights are poorly made with flammable materials and inexpensive wiring, they can spark and cause fires on shrines, damaging and destroying monastery treasures*

Remember to remove trash from inside monastery buildings. Trash can be a source of fuel for fires. For example, if garbage cans full of paper are burned outside, they can set the plants, trees, and the building on fire.



*Burning trash can start large fires that destroy monasteries*

### **Fire Can Destroy Electronic Media**

You might think that we are creating digital reports and digital documentation that will, when migrated, last forever. However, fire can destroy flash drives, computers, everything that was migrated. This is a flash drive that melted in a fire.



*Fire can destroy electronic media devices such as this flash drive, and thus the information it carries is lost (CCI)*

### **Fire Causes Extensive Damage**

With a fire, it is not just the flames that cause damage but heat and smoke as well. Monastery treasures close to the center of a fire can become distorted and covered with layers of damaging soot. Smoke damage is significant to works of art. Fire destroys monastery treasures, but smoke damage can be equally harmful.

Water damage occurs when the fire department or other people come and pour water on the flames, creating further damage. Water used to put out a fire can cause even more damage than the fire itself. The amount of water and how it is used to douse a fire can vary widely, depending on monastery location and the resources available at the time. You can read about salvage of fire and water-damaged treasures in further sections of this resource.

Even when the fire is out, damage occurs, objects are broken, and looting is common. If the perimeter is not well established, people often pillage after a disaster. Establishing a safe perimeter around a fire zone is crucial to prevent death and injury to people, and to protect monastery treasures.

Fire-damaged treasures that suffered from high heat, smoke, and water can be further damaged by handling and being carried to safety beyond the fire zone. They are exceptionally fragile. Some can be stabilized and used again. Some are so fragile they crumble with a light touch. Some only require careful cleaning to remove soot and dirt. Others may appear strong, but the smell of smoke is too strong for them to be used again.

The collection area can be secured from theft, but also it is important to protect from weather. Storing damaged treasures outside in the rain and wind and stacking them on top of each other can cause further damage.



*Without disaster planning and with little fire prevention, these monastery treasures suffered further after they were damaged in the fire*

An Emergency Plan is very important because when a fire happens, your Team is already trained to respond. Your Fire Team and local fire responders that your monastery has a good relationship with should have a map of the monastery campus and surrounding community resources that may be needed during the fire and during recovery.

After the fire is under control and it is safe for people to re-enter the monastery buildings, it may be possible to evacuate monastery treasures to your designated safe area. Then you can do your very best to protect the treasures from further damage from the heat of the fire, and the water used to fight the fire. Protecting the treasures from soot and smoke is also crucial at this phase. However, removing soot and smoke can be difficult and expert advice should be sought.

### **Fire Prevention**

Smoke detectors are devices that detect particles of combustion, either visible or invisible to the human eye, and send out an alert. Some newer monastic buildings do have smoke detectors and carbon monoxide detectors, but most monasteries do not. Smoke detectors are inexpensive and should be placed in lhakhang, shedra, kitchen, bedrooms, and in all parts of the monastery buildings. This is such a simple and low-cost way to save lives and preserve monastery treasures for future generations. And yet smoke detectors are rarely seen. You do not see them in most museums, monasteries, or even in nunneries where the nuns sleep. They are so important to have.

There are single smoke detectors designed for simple, low-cost installation, and also more expensive and sophisticated control panels that can monitor smoke detection devices that are electronically connected throughout the monastery campus.

If a small fire is detected or noticed, a portable fire extinguisher can be effective if used correctly, and if the device is the correct type for that specific type of fire. It is vital to know that using the wrong type of fire extinguisher can be dangerous to the operator and spread the fire.

- Class A – common combustibles
- Class B – flammable liquids
- Class C – energized electrical
- Class D – combustible metals such as magnesium and sodium

It is important to maintain a schedule of monthly inspection and be certain that they have not expired.

Fire extinguishers can be dangerous when used by untrained people. Selection of the right type of extinguisher and its appropriate placement are both important safety issues. Perhaps monasteries can get advice and training from local fire officials if appropriate in your area.



*Fire extinguishers are important, and it is equally important is to use the appropriate kind for your building and to be certain that they are up-to-date.*

## **Summary**

To prevent fires, to prevent fire damage, and to plan for reducing fire damage in the event of a fire, all require training. At least one person in each monastery, shedra, and community can be trained and designated to be the Fire Chief, and others trained as members of the Fire Team.

Smoke detectors can be installed. If you have fire extinguishers, make sure you know how to use them and that they are updated and inspected. Sometimes fighting fires prevents the fire from spreading but creates other damage such as smoke and water. Knowing in advance how to handle treasures that have received smoke damage and water damage is extremely important, because their condition can be stabilized soon after the disaster, and they can be stored safely until further preservation work can be enacted.

Prevention of fires is the most important activity. This includes control of open flames, and the storage of flammables. With fire, as with other Risks, Prevention is the best cure.

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## Basic Elements of Emergency Plan for Monasteries and Communities

1. People First
2. Who Do You Call?
  - Who is in charge?
  - Emergency phone numbers
  - Full monastery residence list, to text, WeChat, WhatsApp , etc.
3. Who Should Salvage Collections?
  - Monastery Treasures Salvage Team (trained previously)
4. Where to Bring Damaged Treasures
  - Another monastery?
  - Your monastery dining room, classrooms, etc.
5. What Do You Salvage First?
  - Decide your priorities, preferably before an emergency
  - Mark the location of these priority treasures on floor plans
6. Where Are the Emergency Supplies?
  - Stockpile supplies before an emergency occurs
  - Mark the location of supplies on floor plans
  - Contact local vendors for additional supplies
7. Who Provides Security During an Emergency?
  - Monastics, community members, or government?
8. What Information Technology Will You Need to Replace?
  - Survey your hardware and software currently in use
  - Store monastery files in "cloud" or duplicated offsite
9. Do You Have Insurance?
10. Who Has the Plan?
  - Make a list of who has copies of your Emergency Plan
  - Update Emergency Plan and Team



དགོན་པའི་གནའ་དངོས་གཏེས་སྤུང་སྤྱོད་བཅར་ཚོགས་པ།

**Digital inventory** འགྲུལ་ཚམས་འོག་ནས་དངོས་མེར་འཕྲོད་པ།

**Risk assessment and disaster mitigation** ཉེན་ཁ་རྫོག་འཕྲོག་དང་ཇོ་ཏུག་གཤོང་ལེན།

**Recording digital interviews with elders** མི་རྒན་རབས་དང་འགྲུལ་ཚམས་འོག་ནས་བཅར་འཕྲིན་སྤྱད་སྤྱོད་པ།

**Scientific research** ཚན་རིག་ཉམས་ཞིབ།

**Current project** ད་དུག་ལས་འཚམས།

**Free online preservation resource for communities and monasteries**

དགོན་པ་དང་སྤྱོད་ཚོགས་ཀྱི་ཚེད་ཏུ་གནའ་དངོས་གཏེས་སྤུང་འགྲུལ་ལམ། མི་རྒན་རབས་འོག་རིན་མེད་ཏུ་སྤྱུང་བ།



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## Preservation of Buddhist Treasures

### RISK ASSESSMENT ཉེན་ཁ་དཔྱད་ཞིབ།

- ❖ **Pandemic** ཡོངས་ཁྱབ་རིམས་ནད།
- ❖ **Earthquake** ས་ཡོམ།
- ❖ **Fire** མེ།
- ❖ **Water** ལྷ།
- ❖ **Theft** ལྷན་མ།
- ❖ **Pests** གནོད་འབྲ།
- ❖ **Temperature and Relative Humidity** རྫོད་ཚད་དང་ལྗོས་བཅས་ཀྱི་བཞུའ་ཚན།
- ❖ **Human Choices** མིའི་འདམ་ག།
- ❖ **Pollution** འབགས་བཅོག།
- ❖ **Light** རྟོག་མེ།

### EMERGENCY PLANNING AND DISASTER MITIGATION མངུག་འཆར་གཞི་དང་ཉེན་བར་ཞི་འཇུག།

### SAFE STORAGE ཉེན་མེད་དོས་ཁང།

### DOCUMENTATION ཡིག་ཆ་ཚོ་བཞོད།

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